The Relationship Between Childhood Interpersonal Trauma and Somatisation in Adulthood: The Role of Alexithymia and Dissociation.

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Declarations

This thesis has been composed by myself, the work contained herein is my own and has not been submitted as part of any other degree.

Signed

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Abstract

Introduction

The aims of the current study were to investigate the associations between childhood interpersonal trauma (CIT) and somatisation, and also to examine the potential meditative effects of alexithymia and dissociation on the relationships between CIT and somatisation. Previous research has linked various types of childhood abuse to somatisation in adult life. Associations between negative parenting experiences, alexithymia, dissociation and somatic complaints have also been reported. The current study aimed to construct a path model to explore the relationships between the variables of childhood abuse, parental style, alexithymia, dissociation and somatisation.

Method

The participants were adults who were attending primary care clinical psychology services in the local area. Participants were asked to complete six self-report questionnaires including the Child Abuse & Trauma scale (CAT), the Parental Bonding Instrument (PBI), the Dissociative Experiences Scale (DES-II), the Toronto Alexithymia Scale (TAS-20), the somatisation subscale of the Revised Symptom Checklist – 90 (SCL-90-R) and a demographic questionnaire.

Results

Correlation analyses revealed significant associations between all forms of abuse and somatisation with the exception of sexual abuse. Punishment (physical abuse) was found to have the strongest association with somatisation, while parental style was not related to somatisation. Alexithymia did not emerge as a potential mediator in the relationship between abuse and somatisation, but amnestic dissociation (AD) did. Further analysis, however, revealed that AD failed to meet the criteria of a mediator in the relationship between punishment and somatisation.

Discussion

The findings are supportive of an association between childhood abuse, specifically punishment, and somatisation in adulthood. The variables under investigation for potential meditative effects failed to meet the required criteria. The results are discussed in terms of their relevance for clinical practice and future research. The limitations of the current study are described, including the considerable restrictions placed on the statistical analysis as a result of the small sample size.

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Chapter 1

Introduction

1.0 Overview

The first research objective of the current study is to investigate the relationship between childhood interpersonal trauma and somatisation in adulthood. The second research objective is to examine whether alexithymia and dissociation mediate the relationships between negative childhood experiences and somatisation. The study will describe and define the variables of interest, exploring the prevalence and etiology of these factors, before discussing theoretical models of somatisation. The findings of empirical research will then be reviewed.

A number of theoretical models have been proposed to explain the occurrence of somatic symptoms and pathological illness behaviours. Psychoanalytic theories emphasise the predominance of psychogenic factors in somatic presentations, while behavioural and social learning theories describe the pivotal roles of reinforcement and modelling of illness. Cognitive behavioural approaches describe the influence of early experiences on the development of beliefs and schemata and their subsequent impact on illness behaviours. Emotional processing models focus on the difficulties encountered by individuals when trying to manage and understand their own affects, highlighting the potential for emotions to become somatised in their expression. No one theoretical model adequately accounts for all of the factors that are associated with somatisation, however overlap between models is considerable and unification of these theories may provide a more coherent explanation of somatisation (Kellner, 1990).

The concept of somatisation has been a source of confusion throughout the years, leading to many different definitions. For example, Fink's (1996) description of somatisation makes no assumption regarding the involvement of psychological factors: '...the phenomenon that some patients suffer from bodily symptoms that have no adequate medical explanation.'(p.7). Conversely Lipowski (1986) defined somatisation as 'a tendency to experience and communicate psychologic [sic] distress in the form of physical symptoms' (p.609); the notion of psychological causation is apparent in this description. Historical and contemporary reasons for this confusion are considered later in the introduction.

The impact of childhood experiences and in particular traumatic experiences, on pathological presentations of illness is a common theme among all the theories referred to previously. Over the past 20 years research has provided empirical support for associations between childhood trauma, adult psychopathology and physical health problems (Briere & Runtz, 1990; Brown & Finkelhor, 1986; Finzi-Dottan & Karu, 2006; Gauthier *et al.*, 1996; Moeller, Bachman & Moeller, 1993; Schreiber & Lyddon, 1998; Springer *et al.*, 2003). The vast majority of research examining the long-term effects of childhood abuse have focussed on a specific type of abuse, in particular childhood sexual abuse and to a lesser extent physical abuse, while emotional or psychological forms of abuse have been largely ignored (Briere, 1992; Briere & Elliott, 1997; Claussen & Crittenden, 1991). This is problematic for a number of reasons. It has been recognised that specific types of abuse tend not to happen in isolation, but more frequently occur simultaneously with other forms of abuse. Therefore the potential confounding effects of multiple forms of abuse on adult pathology should be taken into account (Briere & Runtz, 1988b; Briere & Runtz, 1990). Other researchers have

highlighted the importance of considering other variables that may contribute to negative outcomes in later life such as general dysfunction within the family environment and parental style (Fromuth, 1986; Lackner, Gudleski & Blanchard, 2004; Nash *et al.*, 1993) and quality of relationship with primary caregivers (Waldinger *et al.*, 2006). As a result of the these concerns, childhood interpersonal trauma (CIT) as defined by the current study incorporates sexual, physical and emotional abuse, neglect and exposure to a negative home environment as well as experience of negative parenting.

Dissociation is defined by the DSM-IV as 'a disruption in the usually integrated functions of consciousness, memory, identity or perception of the environment' (American Psychiatric Association (APA), 1994, p.477). Over the years a strong association has been found between childhood abuse and dissociation, in both clinical and non-clinical populations (Briere & Runtz, 1988a, 1988b; Chu & Dill, 1990; Sanders & Giolas, 1991; Şar *et al.*, 2000). However, the strength and assumed simplicity of the reported associations between childhood trauma and dissociation has been criticised (Merckelbach & Muris, 2001). Historically dissociation and somatic symptoms, specifically conversion reaction, were classified together under the category of psychoneurosis, within the first and second editions of the DSM (APA, 1952, 1968, cited in Kihlstrom, 1994), both being viewed as different manifestations of hysteria. The DSM-III (APA, 1980, cited in Kihlstrom, 1994) finally separated the disorders into two distinct categories of dissociative disorders and somatoform disorders, which contained a subcategory of conversion disorder (Kihlstrom, 1994). Janet in the late 19th century (cited in Taylor, Bagby & Parker, 1997) suggested that traumatic events might remain outside of conscious awareness, while being expressed somatically.

Research by Saxe *et al.* (1994) appears to provide some empirical support for Janet's proposition, finding that patients with dissociative disorders scored significantly higher for somatisation than a control group of patients with few dissociative symptoms.

Alexithymia has also been linked historically with somatisation, the concept having developed from Sifneos's observations of patients with psychosomatic illnesses in the late 1960s. Alexithymia describes a pattern of deficits in affect including, difficulty identifying and distinguishing between feelings and the physiological responses that accompany emotional arousal; impoverished imaginal processes; and an externally orientated cognitive style (Taylor, Bagby & Parker, 1997). Alexithymia has been conceptualised as a stable personality trait resulting from dysfunctional neurobiological process. However, some researchers have also described alexithymia occurring as a secondary, state reaction in children and adults following trauma or stress (Krystal; 1982) and also in patients who are suffering from chronic or life-threatening illnesses (Freyberger, 1977).

Associations between alexithymia and dissociation have been reported, although the strength of this relationship has frequently been attributed to specific dimensions of the alexithymia construct and dissociation. (Elzinga, Bermond & van Dyck, 2002; Grabe *et al.*, 2000; Irwin & Melbin-Helberg, 1997; Wise, Mann & Sheridan, 2000).

To date, no study has examined the potential mediative effects of alexithymia and dissociation on the associations between childhood experiences of abuse, negative parenting and somatisation. The aims of the current study were therefore to investigate the relationships between various forms of CIT and somatisation and to discover the extent to which alexithymia and dissociation act as mediators in such associations.

The following section will examine CIT, focussing on how it has been defined and some of the inherent difficulties of assessing childhood experiences retrospectively. The prevalence of various forms of abuse and the long-term sequelae of negative childhood experiences will also be considered.

Childhood Interpersonal Trauma

1.1 Defining Childhood Interpersonal Trauma

The term *childhood interpersonal trauma* (CIT) was chosen for inclusion in the study title for its ability to reflect not only the obvious examples of abuse that commonly occur to children, such as sexual and physical abuse, but also as the term could incorporate the more subtle but significant trauma of poor quality relationships with primary caregivers, which have been found to have prolonged negative effects on the life of the individual, well beyond childhood.

In the current study the measures used to assess CIT include the Child Abuse and Trauma scale (CAT: Sanders & Becker-Lausen, 1995; Kent & Waller, 1998) and the Parental Bonding Instrument (PBI: Parker, Tupling & Brown, 1979). The CAT is a self-report questionnaire, which measures maltreatment experienced in childhood and adolescence. Specific forms of maltreatment that are assessed by the CAT include, physical abuse (punishment), sexual and emotional abuse and neglect, in addition to a number of questions pertaining to a negative home environment.

The PBI was designed 'to allow any parental contribution to disorder to be quantified' (Parker, 1990, p.281). A wealth of evidence suggests that the quality of the relationship between parent and child has a sustained and fundamental impact on lifelong psychological adjustment (Enns, Cox & Clara, 2002; Schreiber & Lyddon, 1998).

1.2 Prevalence of Childhood Abuse

Finkelhor (1994) carried out a review of international research into the prevalence of childhood sexual abuse (CSA). Estimates for CSA ranged from 7% to 36% in females, and from 3% to 29% in males. A UK survey of young adults found that 21% of females and 11% of males reported experiences of CSA (May-Chahal & Cawson, 2005). Baker and Duncan (1985) also surveyed prevalence of CSA in a general population sample in Britain, conducting interviews in respondents' homes. They found a prevalence rate of 10%, but acknowledge that 13% of individuals interviewed refused to answer the question. The researchers speculate that a refusal to answer could in fact indicate a history of sexual abuse where the individual is unwilling to disclose such personal and potentially painful information.

Prevalence rates for CSA in psychiatric populations are often only assessed in females. Of the studies that have examined CSA in both genders, prevalence rates have been reported in the range of 22% to 63.6% in females, and 16% to 39% in males (Berenbaum, 1996; Jacobson & Richardson, 1987; Shack *et al.*, 2004; Wurr & Partridge, 1996).

Estimates of the prevalence of physical abuse in student and general population samples range from 22.2% to 23% in males, and from 13% to 19.5% in females (Briere & Elliott, 2003; Salmon & Calderbank, 1996). May-Chahal and Cawson's (2005) UK survey found that 21% of participants had been physically abused by a parent or guardian, with 7% having experienced severe physical abuse.

Prevalence figures for emotional abuse and neglect are less frequently reported in the literature, which is presumably related to the lack of consensus in defining these forms of maltreatment (Doyle, 1997; Gauthier *et al.*, 1996). However, studies that have reported prevalence rates for emotional abuse found an overall rate of 29% to 33% (Doyle, 1997; May-Chahal & Cawson, 2005), while the prevalence of neglect or serious absence of care was found to be 6% (May-Chahal & Cawson, 2005).

1.3 Issues with Retrospective Reports and Definitions of Abuse

Adult retrospective reports of abuse constitute the main source of prevalence figures for childhood abuse. The reliance on such methodology raises concerns regarding the accuracy of these figures, as various authors have highlighted the potential for inaccurate retrospective self-reports. Explanations for under-reporting include: individuals forgetting about abusive experiences that occurred at an early age (Femina, Yeager & Lewis, 1990) dissociative processes disrupting memory (Chu *et al.*, 1999); conscious suppression of memories of abuse driven by a desire to avoid distress (Briere & Elliott, 1997); and fear of perceived stigma or embarrassment on disclosing abuse (Briere, 1992; Femina, Yeager & Lewis, 1990). Bifulco *et al.* (2002) note an advantage of obtaining retrospective reports of abuse from adults, both from an ethical point of view and in terms of minimising under-reporting, which is that 'the individual is more at liberty to be open without fearing negative consequences or reprisals' (p.255).

The potential for over-reporting has also been considered. Briere and Elliott (1997) suggest that some individuals may over-state abusive experiences out of concern that they will not receive the care and attention that they require. They

also note the possible motivating effect that financial compensation might have on inflating reports of abuse, but warn against cynicism in clinical practice. The veracity of retrospective reports is also challenged by Tillman, Nash & Lerner (1994) who warn that 'dissociation confounds the accuracy of reports of early trauma, that is, dissociative symptomatology may predispose some patients to confound fantasy, dream, and mnemonic experience' (p.405). Hardt and Rutter (2004) carried out a review of studies that had employed adult retrospective reports of abuse. They conclude that caution is required when relying on such reports, indicating that false negatives are more likely than false positives, stating that even in cases of severe abuse and neglect 'about a third of individuals do not report its occurrence when specifically asked about it in adult life' (p.270).

Various studies have compared formats of self-report questionnaires to face-to-face interview. Martin *et al.* (1993) found that women were more likely to disclose incestuous abuse by self-report questionnaire. The authors conclude that interviews had the advantage of enabling clarification when information was unclear, but that the 'anonymity of a written response may be a positive influence on disclosure' (p.389). Dill *et al.* (1991) reported similar findings, noting that abuse was twice as likely to be reported by self-report questionnaire. They suggest that this difference may have been due to the level of confidentiality and privacy that self-report questionnaires afford respondents, while 'there are more opportunities for interpersonal mistrust when disclosure occurs in a face-to-face encounter' (p.169). A study by DiLillo *et al.* (2006) described respondents' preference for more anonymous methods of reporting abusive experiences. Female undergraduate students were randomly assigned to one of three modes of assessment, which were computer-administered questionnaire, self-report

questionnaire and face-to-face interview. Feedback questionnaires from all three groups demonstrated that, regardless of victim status, participants' preferred either computer assessment or self-report questionnaire to face-to-face interview. Despite this preference the authors found that format had no effect on the likelihood of disclosing abuse.

The way in which abuse is defined will clearly affect estimates of prevalence. Fry (1993) describes some of the difficulties defining sexual abuse, including what constitutes abuse, particularly in the case of non-contact forms of abuse. Other issues where there are likely to be differences include the point at which an individual is no longer considered to be a child, and whether or not definitions indicate the requirement for an age difference between the victim and perpetrator, and if so there is the need to specific the size of the age gap, another source of variation. Similar concerns exist with respect to definitions of physical and emotional abuse (Claussen & Crittenden, 1991; Moeller, Bachmann & Moeller, 1993). Gauthier *et al.* (1996) note the additional problems of defining neglect, which by its very nature involves acts of omission.

Problems arise with respect to the breadth of definition. Broad definitions are very likely to obscure research findings, while more narrow definitions, focussing on severe abuse are likely to produce extreme results, and will ultimately exclude abusive experiences that are damaging while discounting some objectively unacceptable behaviours and treatment (Briere, 1992; Mullen *et al.*, 1996).

1.4 The Sequelae of Childhood Interpersonal Trauma

Empirical studies have produced a wealth of evidence from years of research demonstrating associations between childhood trauma and a diverse range of psychiatric, psychosocial and physical health problems in adult life. Abusive experiences in early life have been linked to: depression and anxiety (Bifulco, Brown & Adler, 1991; Mancini, Van Ameringen & MacMillan, 1995; MacMillan *et al.*, 2001); eating disorders (Hall *et al.*, 1989; Rayworth, Wise & Harlow, 2004); post-traumatic stress disorder (Roth *et al.*, 1997; Saunders *et al.*, 1992); personality disorder (Herman, Perry, & van der Kolk, 1989; Ogata *et al.*, 1990); substance abuse (Bennett & Kemper, 1994; Kendler *et al.*, 2000); self-harm (Zlotnick, Shea *et al.*, 1996); suicidality (McHolm, MacMillan & Jamieson, 2003); re-victimisation (Becker-Lausen, Sanders & Chinsky, 1995; Fromuth, 1986); and somatisation (Morrison, 1989; Pribor *et al.*, 1993).

The purpose of the above section was to define CIT within the context of the current study, while highlighting some of the inherent problems of defining abuse and of assessing childhood trauma retrospectively. The long-term impact of CIT on psychopathology was also briefly reviewed. Research relating specifically to CIT and somatisation will be discussed in greater detail later in this chapter. The following section will consider alexithymia and dissociation, the variables under investigation as potential mediators in the current study. Definitions, prevalence rates and etiological factors will be discussed for both alexithymia and dissociation.

Potential Mediators

1.5 Defining Alexithymia

The term *alexithymia* was first introduced by Sifneos (1972) being derived from the Greek *a* meaning lack, *lexis* for word, and *thymos* meaning feeling. The term was used to describe a pattern of deficits in affect that had been observed clinically by Nemiah and Sifneos (1970) during their investigations of psychosomatic patients. The alexithymia construct has evolved since it was first delineated and the term now specifically refers to a cluster of features including:

> (i) difficulty identifying feelings and distinguishing between feelings and the bodily sensations of emotional arousal; (ii) difficulty describing feelings to other people; (iii) constricted imaginal processes, as evidenced by a paucity of fantasies; and (iv) a stimulus-bound, externally orientated cognitive style (Taylor, Bagby & Parker, 1997, p.29).

Sifneos was not the first to recognise this particular set of characteristics in psychosomatic patients, a number of researchers preceding him had observed similar presentations. Freudian psychoneurotic explanations of psychosomatic illness suggested that somatisation was attributable to intrapsychic conflict and that interpretation of unconscious conflict would lead to alleviation of somatic symptoms. Ruesch (1948) however, noted that insight orientated therapy was not successful due to the 'infantile personality' of psychosomatic patients in whom development was hypothesised to have 'arrested' (p.134). He suggested that psychosomatic patients do not have the ability to discharge physical tension through means of self-expression as: 'verbal, gestural, or other symbols are not connected with affects and feelings' (p.139). Freedman and Sweet (1954)

recognised the emotional illiteracy of a group of psychosomatic patients, commenting on how completely their anxieties had been somatised, such that the patients were mystified at the suggestion that emotional distress could be responsible for their physical symptoms. Freyberger (1977) comments on the reasons for the failure of psychoanalytic techniques in alexithymic individuals:

> First, *decreased inner motivation* due to reduced or failing self-reflection abilities...Second, *diminished tolerance* particularly with regard to those frustrations which are typical to the psychoanalytically orientated psychotherapeutic situation. Third, a very marked predominance of *oral-narcissistic* needs which makes impossible the learning of new emotional behaviour. (Freyberger, 1977, p.337)

There is a considerable body of research supportive of a link between alexithymia and somatisation. Taylor *et al.* (1992) examined the relationships between alexithymia and somatic complaints in psychiatric outpatients. Their results revealed that scores on the Toronto Alexithymia Scale (TAS: Taylor, Ryan & Bagby, 1985) were significantly associated with education and socio-economic status, alexithymic individuals having less education and a lower socio-economic level. Alexithymic patients also scored significantly higher than non-alexithymic patients on scales measuring hypochondriasis, physical and somatic concerns, organic symptoms and somatic complaints. The authors acknowledge that a limitation of the study was that medical morbidity was not assessed, and therefore the possibility of organic disease being responsible for some of the somatic symptoms reported cannot be ruled out. Alexithymic patients were also found to have more general psychopathology than non-alexithymic patients, which raises

that possibility that alexithymia in some cases may be a secondary state response to affective and anxiety disorders.

Bach and Bach (1996) measured levels of alexithymia and somatisation in patients with somatoform disorders and medically ill patients. The somatoform group scored significantly higher for alexithymia than the medically ill group, as a result of higher scores on the difficulty identifying feelings (DIF) subscale of the Toronto Alexithymia Scale-20 (TAS-20: Bagby, Parker & Taylor, 1994a). Scores on the somatisation subscale of the Revised Symptom Checklist-90 (SCL-90-R: Derogatis, 1994) were predictive of alexithymia in the somatoform patients, while the severity of depression and level of psychosocial impairment were predictive of alexithymia in the medically ill patients. Waller and Scheidt (2004) reported similar results when they compared patients diagnosed with somatoform disorders with age, sex and educationally matched healthy controls. Their findings revealed that the somatoform group were more alexithymic than the control group. When negative affect was controlled for, only the DIF subscale of the TAS-20 distinguished the two groups.

De Gucht and Heiser (2003) carried out a review of the research literature on alexithymia and somatisation. They discovered that in 16 out of 18 study samples, a significant association had been found between alexithymia and somatisation. Combining the correlation coefficients of all these studies indicated a small to moderate effect size. The component of alexithymia that was most significantly associated with somatic complaints was DIF. The review also found that in all studies comparing the alexithymia scores for somatoform patients against those of healthy controls, the somatoform patients scored significantly

higher for alexithymia, with moderate to large effect sizes. The authors warn about the need to control for potentially confounding factors such as current psychopathology and various demographic variables, while a few researchers have found no association between alexithymia and somatisation (Karvonen *et al.*, 2005) and medically unexplained symptoms (Kooiman *et al.*, 2000), leading them to question the theoretical relationship between these factors.

Although the concept of alexithymia developed from observations of patients with psychosomatic illnesses, further research has indicated associations between alexithymia and a variety of psychopathologies, including: depression (Honkalampi *et al.*, 2001; Saarijärvi, Salminen, Toikka, 2001); panic disorder (Zeitlin & McNally, 1993); post-traumatic stress disorder (Frewen *et al.*, 2006; Yehuda *et al.*, 1997); substance abuse (Cecero & Holmstrom, 1997; Keller & Wilson, 1994); and eating disorders (Corcos *et al.*, 2000; Speranza *et al.*, 2005).

1.6 Prevalence of Alexithymia

Mason *et al.* (2005) assessed the prevalence of alexithymia in a UK student sample. They found an overall rate of 18% alexithymia in the mixed gender student group. This finding is broadly consistent with other international estimates of prevalence in general population and student samples, which range from 13% to 18.8% (Parker, Taylor & Bagby, 1989; Salminen *et al.*, 1999). Mason *et al.* (2005) found that alexithymia was more prevalent in females (20%) than in males (7.7%), however other studies have consistently reported higher prevalence of alexithymia in males (Kokkonen *et al.*, 2001; Salminen *et al.*, 1999). Prevalence of alexithymia in psychiatric outpatients range from 37% to 39.8% (Taylor *et al.*, 1992; Wise, Mann & Sheridan, 2000).

1.7 Etiology of Alexithymia

Various etiological factors have been proposed as the cause of alexithymia, including developmental inadequacies and neurobiological dysfunctions. Perhaps the most useful etiological conceptualisations are those that offer an integrated perspective, however for the sake of clarity different etiological factors will be discussed separately.

Genetic Influence

Some researchers have speculated that alexithymia may be an inherited trait. Lumley *et al.* (1996) explored alexithymia's relationship to family functioning, in a student population. They found that while alexithymia scores were associated with general family dysfunction, maternal alexithymia scores were also positively correlated with those of their offspring. There are obviously a number of potential explanations for their findings. Offspring alexithymia scores may represent a defence against a dysfunctional home environment, while associations between maternal and offspring alexithymia scores may reflect adaptations by both parties to the family environment. Alternatively these results may be indicative of the genetic transmission of trait alexithymia.

Heiberg and Heiberg (1977; 1978) studied a small sample of monozygotic and dizygotic twins, concluding that alexithymic traits were hereditary. Unfortunately alexithymia was assessed using the Beth Israel Hospital Psychosomatic Questionnaire, which had not been validated, the sample size of 33 pairs was very small, and there was no attempt made to control for the influence of environment. Valera and Berenbaum (2001) carried out another twin study with a larger sample, using the well-validated Toronto Alexithymia Scale (TAS-20). However, these

results were strongly supportive of the influence of family environment on the development of alexithymia, but were inconclusive regarding genetic involvement.

Developmental Factors

Clearly a child's early environment and experience of being parented play a crucial role in the development of abilities that enable the child to regulate affective states. Negative experiences in childhood have been hypothesised to disrupt normal emotional development, potentially resulting in the deficits defined as alexithymia. A number of studies have examined the effects of family environment and parenting experiences on alexithymia. Berenbaum and James (1994) found that alexithymia was associated with growing up in a family environment where there was a lack of positive communication and individuals did not feel safe either physically or emotionally. Kench and Irwin (2000) reported similar findings of an association between alexithymia and lack of family expressiveness. However, low familial expressiveness only explained a small proportion of the variance, in this study, suggesting the involvement of other more significant factors in the development of alexithymia.

There has been some support for an association between childhood abuse and alexithymia. Berenbaum (1996) examined the relationships between abuse, alexithymia and personality disorder in male and female psychiatric outpatients. He found that these three variables were all significantly associated with each other. Individuals who had been abused scored significantly higher on the DIF subscale of the TAS-20 as compared to non-abused individuals.

Zlotnick, Zakriski *et al.* (1996) found that female psychiatric inpatients with sexual abuse histories scored significantly higher for alexithymia than similar patients with no abuse history. The authors note the potential confounding effect of physical abuse, which frequently co-occurred with sexual abuse, however this study did not assess for other types of abusive experiences or neglect. A later study by Zlotnick, Mattia and Zimmerman (2001) considered childhood trauma, alexithymia, and posttraumatic stress disorder (PTSD) in psychiatric outpatients. Patients with PTSD were found to have higher levels of alexithymia than patients without PTSD. Regression analysis demonstrated that higher levels of emotional and physical neglect were independent predictors of higher alexithymia scores. Research by Frewen *et al.* (2006) also examined the relationships between childhood abuse and alexithymia in individuals with PTSD, but additionally assessed dissociation. They found that alexithymia was strongly correlated with levels of dissociation, PTSD symptoms and all types of childhood abuse assessed, including emotional, physical and sexual abuse as well as emotional and physical neglect.

A limitation of the studies described above was their failure to consider other aspects of childhood that might contribute to the development of alexithymia. A more comprehensive study carried out by Kooiman *et al.* (2004) examined the relationships between childhood sexual and physical abuse, perceived parenting, alexithymia, dissociation and affect. The study found no association between abuse and alexithymia or dissociation. Sexual abuse history was however correlated with depression. Lack of care and increased levels of overprotection by each parent were associated with alexithymia. Reports of parenting style were then divided into dichotomous categories of 'optimal' and 'non-optimal' to carry

out regression analysis. The results suggested that 'optimal' parenting received from one parent had a buffering effect against the development of alexithymia as a result of 'non-optimal' parenting from the other parent. The authors concluded that sexual and physical abuse during childhood do not contribute to the prediction of alexithymia, the only predictor of alexithymia of some significance in this study being parenting style. In an earlier study however, Kooiman *et al.* (1998) had reported only moderate associations between parental style and the DIF subscale of alexithymia, in a sample of psychiatric outpatients.

Overall the results of these studies suggest that exposure to childhood trauma, growing up in a stressful or neglectful environment with poor quality relationships, may lead to arrested development of emotional processing abilities, as had been hypothesised by a number of authors (Krystal, 1979; Lane & Schwartz, 1987).

Neurobiology

In reference to psychosomatic presentations, MacLean (1949) suggested a neuropsychological explanation, noting the psychosomatic patient's 'apparent intellectual inability to verbalize...emotional feelings' (p.350). He suggested that disturbances in the neural pathways between the rhinencephalon and the neocortex could result in deficits in the cognitive processing of emotion. Such disturbances were thought to prevent the interpretation and subsequent articulation of emotion via verbal expression, with emotions instead finding expression along autonomic pathways, producing somatic symptoms. Nemiah (1975) applied MacLean's (1949) theory of neurological deficit directly to alexithymia, postulating that dysfunction in the paleostriatal dopamine tract

disrupted the flow of affective information from the limbic system to the neocortex.

Since then there have been a number of hypotheses regarding the neurobiology of alexithymia, considered under three broad groupings, which are: (1) deficient communication between the left and right cerebral hemispheres; (2) dysfunction in the right cerebral hemisphere and; (3) dysfunction in the frontal cortex.

Deficient Interhemispheric Transfer

Laterality studies indicate, for a majority of right-handed individuals, the relatively predominant role of the right hemisphere in emotional processing, while the left hemisphere is considered to have a specialised role in language (Lane *et al.*, 1997). Research indicating asymmetric functional laterality of the brain provided the foundations for the hypothesis that alexithymia arises from a disruption of interhemispheric communication. This hypothesis is supported by Hoppe and Bogen's (1977) description of alexithymic characteristics in twelve patients who had undergone surgical transection of the corpus callosum for intractable epilepsy. On the basis of these observations Hoppe (1977) suggested that alexithymia, in individuals with intact corpus callosum, could be due to 'functional commissurotomy'. TenHouten *et al.* (1985a, 1985b) compared the written and verbal reports of eight individuals who had undergone complete or partial commissurotomies, with eight neurologically intact controls. All participants were shown a film with themes of loss and death, designed to provoke emotions. The commissurotomised individuals were found to be more alexithymic than individuals in the control group. An obvious criticism that can

be levelled at studies of commissurotomised patients concerns how generalisable the findings are to non-clinical populations.

Further studies have examined interhemispheric transfer using a tactile finger localisation task, with non-clinical male participants (Parker *et al.*, 1999) and in male patients with PTSD (Zeitlin *et al.*, 1989). Both studies reported strong associations between alexithymia and deficits in bi-directional interhemispheric transfer. One of the limitations for both studies is that tactile finger localisation tasks involve the transfer of sensorimotor information, rather than emotional stimuli. The exclusive use of male participants is a further limitation, as gender and handedness have implications for the extent of laterality.

Right Cerebral Hemisphere Dysfunction

Damage to the right hemisphere has been found to cause problems with emotional perception more commonly than in patients with lesions to the left hemisphere. A number of investigations using non-clinical participants have linked higher scores for alexithymia to poorer perception of facial expression. Therefore it has been suggested that alexithymia may be the result of right cerebral hemisphere dysfunction (Jessimer & Markham, 1997; Mann *et al.*, 1994). Firmer conclusions could perhaps be drawn from these studies had comparisons been made between participants without lesions, and patients with damage to the left hemisphere and another group with lesions to the right hemisphere.

Spalletta *et al.* (2001) measured alexithymia in patients who had suffered a stroke, dividing patients into two groups on the basis of location of damage, either left or right hemisphere. Alexithymia scores in males were significantly higher in those

patients who had suffered right hemisphere damage, in females however, high alexithymia scores were reported following both right and left hemisphere stroke. The results are supportive of the hypothesised link between right hemisphere dysfunction and alexithymia in males. Studies employing patients with lesions are of course subject to the criticism of the potential effects of reorganisation following damage.

Parker, Taylor and Bagby (1992) used conjugate lateral eye movements (CLEMs) as a measure of hemispheric activation in right-handed students who were also assessed for alexithymia on the TAS. The dominance of either right or left CLEMs is hypothesised to indicate activation of the respective contralateral hemisphere (Bakan, 1969). Higher alexithymia scores were obtained by students with predominant right CLEMs, providing support for the hypothesis that alexithymia is the result of under-activity or dysfunction in the right hemisphere. Parker, Taylor and Bagby (1992) acknowledge criticisms of the CLEMs ability to accurately reflect activation in the cerebral hemispheres.

Frontal Cortex Dysfunction

It has long been recognised that damage sustained to the frontal lobes can have a significant impact on an individual's personality, mood and emotional expression (Stuss, Gow & Hetherington, 1992). As alexithymic individuals also have difficulties with the expression of emotion, it has been hypothesised that alexithymia may arise from frontal lobe dysfunction. One specific area of the frontal cortex that has been the focus of attention from a number of researchers for its involvement in emotional expression is the anterior cingulate cortex (ACC), (Berthoz *et al.*, 2002; Frewen *et al.*, 2006; Lane *et al.*, 1998).

Lane *et al.* (1998) used positron emission tomography (PET) to examine cerebral blood flow in non-clinical female participants on exposure to emotion inducing film footage and emotionally laden autobiographical memories, which were used to provoke emotion by recall. Participants' also completed the Levels of Emotional Awareness Scale (LEAS), which assesses an individual's awareness of emotions in terms of complexity and the differentiation of 'self' and 'others' emotions. A significant association was found between cerebral blood flow to the ACC and LEAS scores, leading to speculation that reduced ACC activity may explain alexithymia. Lane *et al.* (1998) acknowledge that participants' scores on the LEAS were all within the median range and therefore limit conclusions, while the requirement for the procedure to be repeated with males and alexithymic individuals is clear.

Berthoz *et al.* (2002) examined cerebral activation in male participants, grouped according to their high or low scores for alexithymia. The participants were scanned using functional magnetic resonance imaging (fMRI) while being presented with pictures designed to arouse either positive or negative emotional states. They found that when comparing the two groups the ACC and mediofrontal cortices demonstrated different levels of activation to positive and negative stimuli. However, during exposure to the neutral stimuli no group differences were observed, providing additional support for the claim that alexithymia is the result of emotional processing deficits. Berthoz *et al.* (2002) concluded that their 'findings provide direct evidence that alexithymia, a personality trait playing a role in affect regulation, is linked with differences in anterior cingulated and mediofrontal activity during emotional stimuli processing' (p.961). Frewen *et al.* (2006) employed fMRI in their study of alexithymia in

patients with PTSD. Their findings were consistent with those of Lane *et al.* (1998) and Berthoz *et al.* (2002).

Further support for the role of the ACC in the emotional processing deficits of alexithymia is provided by Gündel *et al.* (2004) in their report of positive correlations between the size of the right anterior cingulate gyrus (ACG) and alexithymia, a finding that was especially pronounced in males. Contrary to their hypothesis, larger ACG size was associated with higher alexithymia score, which they suggest 'may represent the structural, neuroanatomical correlate of an active inhibitory system causing a down regulation of emotional processing' (p.138). Gündel *et al.* (2004) highlight a number of limitations of their study that can equally be applied to the Berthoz *et al.* (2002) and Lane *et al.* (1998) studies. Firmer conclusions could be drawn if clinical participants were also investigated, while the need to control for depression and anxiety is apparent in light of reported associations with alexithymia (Hendryx, Haviland & Shaw, 1991, cited in Gündel *et al.*, 2004). Research employing non-clinical participants is also open to the criticism that the results could merely reflect levels of emotional intelligence rather than 'clinically meaningful alexithymia' (Gündel *et al.* (2004). Nevertheless, the findings of the neurobiological research described above provide interesting hypotheses and increasingly convincing evidence regarding the physiological basis of alexithymia.

1.8 Trait and State Alexithymia

Alexithymia has been conceptualised as a personality trait, often referred to as primary alexithymia (Taylor, Bagby & Parker, 1997). Research by Salminen *et al.* (1994) provided some empirical support for trait alexithymia, when they

conducted a one-year follow-up study of general psychiatric patients. From baseline to follow-up psychological distress in the participants had decreased but levels of alexithymia remained relatively unchanged, irrespective of whether psychiatric treatment had been received. However, in another one-year follow-up study of patients with major depression, Saarijärvi, Salminen and Toikka (2001) reported that the DIF and difficulty describing feelings (DDF) subscales of the TAS-20 do decrease as depression improves while scores on the EOT subscale do not. Fukunishi *et al.* (1997) noted similar findings when comparing two groups of patients with panic disorder and social phobia to a group of healthy controls. They concluded that secondary or state alexithymia is associated with anxiety, as following treatment they found a significant reduction in alexithymia on the DIF and DDF subscales of TAS-20, but not on the externally oriented thinking (EOT) subscale.

Honkalampi *et al.* (2000) also dispute the stability of alexithymia, after assessing alexithymia and depression in affective disordered patients at baseline and again at six-month follow-up. They concluded that alexithymia is not a stable personality trait in depressed individuals, as 40% of patients were found to be alexithymic at baseline, a figure that had reduced to 23% six months later as depression remitted. Scores on the TAS-20 were associated with levels of depression as assessed by the Beck Depression Inventory (BDI); the BDI accounting for 23% and 42% of the variability in TAS-20 scores at baseline and follow-up respectively. Depression in alexithymic individuals was generally more severe than in non-alexithymic patients, both at baseline and follow-up. Of the patients that had not recovered at follow-up, 95% of these individuals were found to be alexithymic. In addition, ten patients who had not been alexithymic at

baseline were alexithymic at follow-up, the authors speculating that 'poor recovery from depression could in some depressed patients cause the appearance of alexithymic features' (p.307).

De Gucht (2003) examined the stability of alexithymia and neuroticism in relation to somatisation in a group of patients presenting to their primary care physician with medically unexplained symptoms. Neuroticism is a personality trait that has been identified as a risk factor for somatisation (Costa & McCrae, 1987). De Gucht (2003) found that levels of neuroticism and alexithymia remained stable over a six-month period, unlike levels of negative and positive affect and depression and anxiety, all of which were found to have significantly changed from baseline to follow-up. These results are supportive of descriptions of alexithymia as a stable personality trait. Other clinical groups that have been investigated for stability of alexithymia include: patients with inflammatory bowel disease (Porcelli *et al.*, 1996); patients with schizophrenia (Todarello *et al.*, 2005); and patients with major depressive disorder (Luminet, Bagby & Taylor, 2001). All of these studies report the relative stability, if not absolute stability, of alexithymia. The distinction between absolute and relative stability is provided by Luminet, Bagby and Taylor (2001): 'Absolute stability refers to the extent to which personality scores change over time, whereas relative stability indicates the extent to which the relative differences among individuals remain the same over time.' (p.255).

Further evidence supportive of the stability of alexithymia comes from research comparing levels of emotional distress and alexithymia in students both during and after examinations over a 17-week follow-up, while emotional distress had

decreased at follow-up levels of alexithymia had not (Martinez-Sánchez *et al.*, 1998). Salminen *et al.* (2006) also found alexithymia to be relatively stable in a general population study over a period of five years.

Alexithymia has also been reported to occur as a state response to trauma or stress. Krystal (1982) suggested that alexithymia could develop following trauma in childhood, adolescence or adulthood. Early childhood experiences of trauma are hypothesised to disrupt the normal processes of affect becoming desomatised, differentiated and expressed verbally, leading to alexithymia. Being unable to regulate affect leaves the individual extremely susceptible to being emotionally overwhelmed. Traumatic events experienced during adolescence or adulthood, although occurring to an individual with more developed abilities to regulate affect, are still considered to cause 'regression from verbalized, desomatized, and differentiated affects toward the resomatized and undifferentiated form [which] represents a predisposition to psychosomatic diseases' (Krystal, 1982, p.365). Indeed many studies have reported alexithymia in adults following exposure to trauma (Shipko, Alvarez & Noviello, 1983; Zeitlin, McNally & Cassiday, 1993).

The notion of secondary alexithymia developing in response to severe mental illness and psychosomatic disorders is apparent in the conclusions made by Bach *et al.* (1994). They found that 42% of psychiatric inpatients, primarily referred for the treatment of functional somatic symptoms, were alexithymic. The alexithymic patients in this study scored significantly higher than the non-alexithymic patients on various subscales of the SCL-90-R, but the two groups did not differ on the somatisation subscale. The researchers further note that 15 out of 29 patients in the non-alexithymic group had a DSM-III-R diagnosis of somatoform disorder,

and state that if alexithymia were a contributory factor in the development of functional somatic symptoms then higher levels of alexithymia would be expected in patients with somatoform disorders. They conclude that alexithymia may be considered as a 'cognitive-emotional restraint that may emerge during severe psychiatric and somatic illness rather than as a specific dispositional factor for somatisation syndromes' (p.536).

Freyberger (1977) observed an alexithymic-like presentation occurring in patients awaiting organ transplantation, on dialysis and also in those facing potentially life-threatening illness. The limited emotional expression observed in these patients, Freyberger labelled *secondary alexithymia*, which was often found to decrease after successful treatment. Studies by various researchers appear to support this conceptualisation of secondary alexithymia in response to physical illness (Beresnevaite, 2000; Wise *et al.*, 1990). Sifneos (1994) distinguishes neurologically based primary alexithymia, from secondary alexithymia resulting from trauma, arrested development and socio-cultural influences. However as Taylor, Bagby and Parker (1997) point out, significant trauma may not only result in a temporary 'regression in affective functioning but [may] also evoke lasting changes in neuronal excitability' (p.37). They also indicate their preference for the terms *state* and *trait,* distinguishing 'alexithymia as a stable personality *trait* that is independent of etiology and alexithymia that is *state-dependent* and disappears after the evoking stressful situation has changed' (Taylor, Bagby & Parker, 1997, p.37).

1.9 Defining Dissociation

Janet, a French neurologist, first introduced the concept of dissociation in the late 19th century, to explain the somnambulistic presentations of hysteria that he observed. He viewed mental life as being comprised of components, which he termed psychological automatisms. These psychological automatisms were considered to be integrated in normal individuals, stored as explicit memory with perceptions and actions under volitional control. During periods of stress however, an automatism could become separated or dissociated, while continuing to function although no longer accessible to conscious memory or under volitional control. Janet regarded somnambulism as the unconscious repetition of previous trauma; memory for both the original trauma and the repetition being lost to amnesia. Janet also believed hypnotic trance to be the artificially induced equivalent of hysterical somnambulism (cited in, Kihlstrom, 1994; Kihlstrom, Glisky & Angiulo, 1994; White & Shevach, 1942).

Although for a number of years Janet's theory of dissociation was ignored in favour of psychoanalytic conceptualisations, his model received renewed interest following Hilgard's (1994) introduction of neodissociation theory in the early 1970s. Neodissociation theory postulates the existence of multiple cognitive components that function in an integrated manner, while also being capable of individual autonomous activity, isolated from the other cognitive systems. A hierarchical control is assumed to operate, in addition to an overarching executive control. One essential difference between Janet's and Hilgard's conceptualisations of dissociation is that Janet viewed dissociation as resulting from a pathological weakness in hysterical individuals, while Hilgard views dissociation as an coping response to otherwise unbearable trauma. As an

adaptive defence mechanism, dissociation can nevertheless become maladaptive if an individual becomes over-reliant on dissociation as their only means of coping (Brown, 2004).

A contemporary definition of dissociation as listed in the DSM-IV is 'a disruption in the usually integrated functions of consciousness, memory, identity or perception of the environment' (APA, 1994, p.477). Dissociation is understood to occur on a continuum from non-pathological to pathological dissociation, incorporating episodes of amnesia, the ability to become absorbed or imaginatively involved, and experiences of depersonalisation or derealisation (Carlson & Putnam, 1993).

1.10 Prevalence of Dissociation

Carlson *et al.* (1993) recommend a total cut-off score of 30 on the Dissociative Experiences Scale (DES), finding that individuals who score above this figure are highly likely to suffer from a dissociative disorder, or a disorder that involves dissociative experiences, such as PTSD. Carlson and Putnam (1993) indicate however, that the DES is not intended as a diagnostic tool for dissociative disorders. Many researchers have disputed the recommended cut-off, instead setting their own limit, which results in prevalence rates varying greatly. Studies that have used the cut-off score of 30 have reported prevalence rates of pathological dissociation in psychiatric outpatients of between 8% and 15.3% (Dominguez, Cohen & Brorn, 2004; Şar *et al.*, 2000).

1.11 Etiology of Dissociation

Janet described dissociation as occurring in response to stress, but also recognised that some individuals were more predisposed to experiencing pathological dissociation, being particularly vulnerable when physically ill, fatigued or under the influence of alcohol or drugs (cited in, Kihlstrom, Glisky & Angiulo, 1994).

A diathesis stress model of dissociation has received wide support, with research in both clinical and non-clinical populations frequently reporting associations between childhood sexual abuse and dissociative symptoms (Briere & Runtz, 1988a; Ross-Gower *et al.*, 1998). The impact of other forms of abuse, parental characteristic and home environment have also been considered for their potential influence on the development of dissociation. Significant associations have been found between higher levels of dissociation and physical abuse (Chu & Dill, 1990; Mulder *et al.*, 1998); neglect (Şar *et al.*, 2000); maternal dysfunction (Draijer & Langeland, 1999); low paternal care (Modestin, Lötscher & Erni, 2002); negative family communication (Berenbaum & James, 1994); and a dysfunctional family environment (Nash, *et al.*, 1993). Merckelbach and Muris (2001) carried out a critical review of studies that have linked childhood trauma to dissociation. They challenged the robustness and assumed simplicity of this relationship, citing that most of the correlations are only modest in strength and that other variables may also play an important role. Finally they note the association between proneness to fantasy and dissociation, suggesting that this may increase the likelihood of recovery of 'pseudomemories' (p.245).

The possibility of dissociative tendencies being inherited has also been considered. Researchers have distinguished between pathological and non-pathological dissociation when examining inheritability. Waller and Ross (1997) examined pathological dissociation in twins, concluding that shared environment contributed between one third and one half of the variance in pathological dissociation, while there was no evidence of any genetic transmission. However, psychological absorption or non-pathological dissociation has been found to be an inherited trait (Tellegen *et al.*, 1988). Whether psychological absorption, or other hypothesized diatheses such as hypnotisability and fantasy proneness contribute to the development of pathological dissociation remains to be seen (Kihlstrom, Glisky & Angiulo, 1994)

As previously noted there are historical links between dissociation and somatisation, originally being classified in the first and second editions of the DSM (APA, 1952, 1968, cited in Kihlstrom, 1994) as manifestations of hysteria. Current research still provides support for associations between these variables. Norton, Ross and Novotny (1990) found that somatisation was significantly associated with dissociation, in a sample of students. Lipsanen, Saarijärvi and Lauerma (2004) examined the associations between alexithymia, dissociation depression and somatisation in non-clinical participants, finding medium to large correlations between all variables. Saxe *et al.* (1994) investigated the level of somatisation in dissociative disordered inpatients. They found that compared to a control group of patients with few dissociative symptoms, the dissociation group had a significantly higher rate of somatisation, with two-thirds of this sample also meeting the diagnostic criteria for somatisation disorder. They also observed a direct association between the severity of dissociative symptoms and the degree of

somatisation. The authors conclude that their results imply that dissociation and somatisation are often unrecognised in mentally ill patients.

The present section has defined and discussed alexithymia and dissociation as the variables that have been selected for consideration as potential mediators in the relationship between CIT and somatisation. The following section will discuss the definition of somatisation and its prevalence before describing various theories proposed to account for somatisation.

Somatisation

1.12 Defining Somatisation

A considerable degree of confusion has surrounded the concept of somatisation throughout the years. Taylor, Bagby and Parker (1997), trace this confusion back to a distinction made by Freud (1898) between *psychoneuroses* and *neurasthenia*, in his conceptualisation of conversion hysteria. The Freudian concept of *psychoneuroses* refers to neuroses arising from an unconscious psychic conflict, while *neurasthenia* refers to neuroses of somatic origin. This distinction went unrecognised, contributing to the ambiguity in the definition of somatisation. Mai (2004) outlines some contemporary reasons for confusion, beginning with the fact that the term somatisation is commonly used to refer to no less than seven different conditions, including somatisation disorder, conversion disorder, undifferentiated somatoform disorder and hypochondriasis. He also notes the overlap between somatisation and functional syndromes such as irritable bowel syndrome, chronic fatigue and chronic pain, while indicating that existence of an easily diagnosable organic condition does not prevent somatisation occurring comorbidly. The DSM-IV (APA, 1994) notes that functional disorders are 'as yet without established objective signs or specific laboratory findings…' and that therefore, '…their symptoms may count towards a diagnosis of Somatisation Disorder' (p.447).

Lipowski (1986) defined somatisation as 'a tendency to experience and communicate psychologic [sic] distress in the form of physical symptoms and to seek medical help' (p.609). The attributions of somatising patients mean that they are more likely to seek medical assistance for their complaints and often undergo unnecessary physical investigations and procedures at considerable cost the health

services (Barsky, Orav, & Bates, 2005; Bass, 1990; Stuart & Noyes; 1999). Bass (1990) describes the commonly encountered resistance in patients with functional somatic symptoms to accept referral for psychological treatment. Bridges *et al.* (1991) compared patients attending their primary care physicians with somatisation and psychological problems. The attitude of the somatising group was found to be less sympathetic towards mental illness and revealed that somatising individuals would also be more reluctant to discuss psychological problems with a doctor than individuals in the psychology group. The current study recruited participants from primary care clinical psychology services and it was anticipated that sampling from a mental health service would only represent a small proportion of the broader somatising population, specifically those individuals who have comorbid affective and anxiety disorders. The comorbidity of somatisation with psychiatric disorders and dysfunctional coping responses is noted in the DSM-IV: 'Prominent anxiety symptoms and depressed mood are very common...There may be impulsive and antisocial behavior, suicide threats and attempts, and marital discord.' (APA, 1994, p.446)

In order for a formal diagnosis of somatisation disorder to be made, an individual must meet the rigorous criteria listed in the DSM-IV (APA, 1994), an extract of which is provided in Table 1.0 below.

Table 1.0 Diagnostic Criteria for 300.81 Somatization Disorder; DSM-IV, 1994

A. A history of many physical complaints beginning before age 30 years that occur over a period of several years and result in treatment being sought or significant impairment in social, occupational, or other important areas of functioning.

B. Each of the following criteria must have been met, with individual symptoms occurring at any time during the course of the disturbance:

   (1) *four pain symptoms…*

   (2) *two gastrointestinal symptoms…*

   (3) *one sexual symptom…*

   (4) *one pseudoneurological symptom…*

C. Either (1) or (2):

   (1) after appropriate investigation, each of the symptoms in Criterion B cannot be fully explained by a known general medical condition or the direct effects of a substance (e.g., a drug abuse, a medication)

   (2) when there is a related general medical condition, the physical complaints or resulting social or occupational impairment are in excess of what would be expected from the history, physical examination, or laboratory findings

D. The symptoms are not intentionally produced or feigned (as in Factitious Disorder or Malingering).

The focus of the current study is not on diagnosed cases of somatisation disorder; rather the intent is to measure the level of somatised distress occurring in clients attending primary care clinical psychology departments.

1.13 Prevalence of Somatisation

Estimates of lifetime prevalence of somatisation disorder in the USA suggest a rate between 0.2 and 2% in females and less than 0.2% in males (DSM-IV, APA, 1994). However, when less formal diagnostic criteria are applied, it becomes clear that somatisation represents a significant problem for health care services. Goldberg and Bridges (1988) reported a prevalence rate for somatisation of 20% in a UK study of individuals presenting to primary care services. While underlying organic illness was identified in 70% of somatising patients, the account of the symptoms provided by these individuals were not entirely attributable to the diagnosed physical pathology; a finding that is entirely consistent with the C(1) diagnostic criteria described in the DSM-IV (APA, 1994). Barsky, Orav and Bates (2005) investigated somatisation and medical utilisation in female patients attending two primary care practices. They found that 20.5% of the sample received a provisional diagnosis of somatisation, while 58% of these patients also had comorbid anxiety or depression. When they compared health care utilisation for somatising and non-somatising patients, the somatising group had higher medical utilisation than patients with only somatic or psychiatric symptoms alone. Somatisation was the strongest predictor of medical utilisation, while the predictive contribution made by psychiatric disorders was found to be insignificant. Somatising patients had approximately double the amount of inpatient and outpatient medical care of non-somatising patients, which resulted in a doubling of the costs involved in the treatment of this group. The only type of health care utilisation that was not significantly increased in somatising patients was mental health services.

Fink (1995) investigated utilisation of mental health services and level of comorbidity of psychiatric disorders in persistent somatisers. Patients who had had more than ten admissions to medical departments over an eight-year period were selected from the Danish National Patient Register, and divided into three groups of persistent somatisers, transient somatisers and non-somatisers. He found that 48% of somatising individuals also met diagnostic criteria for DSM-III-R personality disorder, while according to ICD-10 criteria 72% had anxiety disorders, 30% were depressed and 20% had psychosis. Eighty-two percent of the persistent somatisers had either been assessed by a psychiatrist or had been admitted to a psychiatric ward on at least one occasion during a medical admission. In the sample population of somatisers, 32% had been admitted between one and five times to a psychiatric department, while 21% had had more than five admissions. Fink (1995) concluded that somatising patients place a significant burden not only on services responsible for physical health care, but also on mental health care too.

1.14 Theories of Somatisation

Over the past 20 years research has provided empirical support for associations between childhood interpersonal trauma and adult psychopathology and physical health problems (Briere & Runtz, 1990; Brown & Finkelhor, 1986; Craig *et* al., 1993; Finzi-Dottan & Karu, 2006; Gauthier *et al.*, 1996; Moeller, Bachman & Moeller, 1993; Schreiber & Lyddon, 1998; Springer *et al.*, 2003). As the focus of the current study is somatisation, various psychological models that have been proposed to explain somatisation will be considered.

Psychoanalytic theories originate from Freud's (1894) theory of conversion hysteria. Physical symptoms are hypothesised to be psychogenic, arising from unconscious conflicts, which cause anxiety. Events that trigger the anxiety remain out of conscious memory and are therefore unexpressed, preventing catharsis. The resulting intolerable anxiety is converted into physical symptoms that are more bearable.

Psychosomatic explanations view all illness as resulting from multiple factors, essentially being a combination of both psychosocial and physiological influences. Lipowski (1968) notes: 'Recognition of the complexity of the psycho-socio-biological processes determining health and disease has displaced earlier reductionist psychogenic hypotheses derived mainly from psychoanalytic theory.' (p.395). Psychosocial factors include the individual's own experiences of illness as well as the illness behaviours that have been observed in others, while actual physical symptoms are thought to reflect the particular physiological vulnerabilities of the individual. In the case of somatisation, the individual communicates their psychological distress through somatic symptoms that are attributed to an underlying organic cause, prompting the individual to seek medical care.

Behavioural theories emphasise the purpose or function of the illness, and the role of reinforcement, by significant others, in the development and maintenance of illness behaviours. The function of assuming a sick-role can be diverse and may include an individual's desire for care and attention, or a desire to avoid an activity or situation that is disliked (Mechanic, 1980). If by adopting the sick-role the individual receives a level of care that would otherwise not have been given,

then such behaviour will have been positively reinforced. Conversely if the individual is excused from some disliked activity then the illness behaviour is negatively reinforced (Fordyce, 1976). Strictly behavioural theories do not necessarily imply underlying psychological distress, nor are they suggesting that the individual is consciously aware of the purpose of their own illness behaviours. An extension to behavioural theories is Social Learning Theory (Bandura 1977), in which illness behaviour is modelled by one individual and observed by another before being imitated. Bandura's (1977) theory describes the need for attention to be paid to the model, so that the behaviour can then be retained and copied in the future when the individual is motivated to do so. Incorporating attention, memory and motivation into this theory brings cognitive elements to this model.

Somatisation as described by cognitive behavioural perspectives focus on the appraisal and interpretation of physical sensations based on underlying dysfunctional beliefs and schemata leading to negative emotional states, such as anxiety and fear. The role of early experiences of illness and the attitudes and responses of caregivers to physical illness are considered to be important in how an individual interprets subsequent somatic symptoms (Stuart & Noyes, 1999), while the reinforcement and modelling of illness behaviours can also be suitably accommodated within cognitive behavioural theories. If a child's verbal expressions of distress are largely ignored, but parental attention and care is forthcoming when the child is physically unwell, then the child may perceive advantages in being unwell or internalise a belief regarding the acceptability of physical ill health over emotional distress. The child may also develop expectations concerning the likely outcome of being unwell, which may be catastrophic if the parental response to illness is fearful, or if the child has been

aware of a death occurring from physical disease, or has witnessed the serious effects of chronic illness in another individual. Rief, Hiller and Margraf (1998) examined the attributions and interpretations of bodily symptoms in somatising and hypochondriacal patients. They found that both somatisers and hypochondriacal patients were prone to catastrophic interpretations of physical symptoms and that attention was more acutely focussed on normal physiological processes, such as the heart beating. Such catastrophic attributions have been found to be predictive of pathological illness behaviour, while also maintaining such behaviour by increasing selective attention to normal physiological sensations (Kirmayer, Robbins & Paris, 1994; Robbins & Kirmayer, 1991). The potential for physiological responses that accompany emotional arousal to be interpreted as evidence of physical illness is entirely feasible, as is so often observed in patients who suffer from panic attacks, when they believe that they are having a heart attack.

Of particular significance to the current study are theories of emotional processing. As Taylor, Bagby and Parker (1997) note: 'emotions are primarily biological events, subjective feelings being a secondarily developed component' (p.118). As described above in the cognitive behavioural model, physiological responses are a normal component of affective arousal, which may be experienced as physical discomfort or pain, as in the case of a tension headache. Problems are thought to arise when an individual pays undue attention to emotionally provoked physiological sensations, misinterpreting them as signs of organic disease. Individuals who are alexithymic by definition have difficulty recognising and processing emotions, which is thought to increase the likelihood that the individuals will view somatic sensations as being indicative of physical illness,

being unable to appreciate their emotional cause. As already discussed, MacLean (1949) had suggested a neurobiological explanation for psychosomatic presentations where disturbances in the cognitive processing of emotion were thought to prevent the normal interpretation and verbal expression of emotion, increasing the likelihood of emotions finding expression along autonomic pathways, producing somatic symptoms.

As previously noted, existing research has investigated the impact of experiences of CIT on adult psychopathology, including somatisation. The links between alexithymia, dissociation and various types of CIT have also been considered, as have the associations between alexithymia, dissociation and somatisation. However, no study has examined the potential mediative effects of alexithymia and dissociation on the relationships between childhood experiences of abuse, negative parenting and somatisation, which are the stated aims of the current investigation. The following section will review research that is of relevance to the current study.

1.15 Abuse, Parenting and Somatisation

Various forms of childhood abuse have been reported to contribute to somatisation. Sansone, Gaither and Sansone (2001) found that multiple types of child abuse were associated with somatic preoccupation in female outpatients who were in attendance at an internal medicine clinic. Sexual abuse was the type of trauma most predictive of somatic symptom reporting, although age and education were also found to be significant predictors of somatic preoccupation, specifically that older and less educated individuals demonstrated greater somatic preoccupation.

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Briere and Runtz (1988a) found that retrospective reports of childhood sexual abuse were associated with adult psychological symptoms, including dissociation, somatisation, anxiety and depression, in a sample of female students. Dissociative and somatic symptoms were found to be most predictive of a sexual abuse history. They speculate that heightened somatic concern and sensitivities may arise as a result of the often physically intrusive nature of sexual abuse, with localisation of sensitivity commonly occurring to the primary and secondary sexual organs, resulting in, for example, chronic pelvic pain. Morrison (1989) compared a group of females diagnosed with somatisation disorder, with a group of, age and race matched, females diagnosed with primary affective disorders. The women with somatisation disorder had significantly higher incidence of childhood sexual abuse than women with primary affective disorder.

Newman *et al.* (2000) assessed females attending an outpatient internal medicine clinic for abuse history, somatic symptoms and health care utilisation.

Participants were divided into abused and non-abused groups for comparison. The results indicated that sexually abused individuals reported significantly more somatic symptoms than the non-abused group, even after physical abuse was controlled for. The abused group also had higher health care utilisation, demonstrated by more visits to the doctor, as well as outpatient visits to surgical and internal medicine departments.

Other research has highlighted the combined effects of both physical and sexual abuse. Bryer *et al.* (1987) found that severity of psychiatric symptoms was associated with self-report histories of childhood sexual and / or physical abuse in a sample of female psychiatric inpatients. Severity of overall psychopathology was related to having experienced both forms of abuse, such individuals scoring significantly higher on the somatisation subscale of the SCL-90-R. Atlas, Wolfson and Lipschitz (1995) tested a small group (n = 33) of psychiatric adolescent inpatients for dissociation and somatisation. Their analysis indicated that adolescents who had suffered a combination of both sexual and physical abuse had significantly higher scores for dissociation and somatisation than adolescents who had no abuse history. An earlier study by Chu and Dill (1990) examined childhood sexual and physical abuse histories in relation to dissociation and adult psychopathology in female psychiatric inpatients. They found a significant association between both types of abuse and dissociative experiences, with individuals who had suffered both physical and sexual assault demonstrating the highest scores for dissociation. In relation to psychiatric symptoms, only physical abuse was significantly associated with the overall psychopathology score and several of the SCL-90-R subscales, however scores on the somatisation subscale were not associated with physical abuse.

The effects of physical and psychological abuse were emphasised in research carried out by Briere and Runtz (1988b) in their study of psychopathology in female students. They found significant correlations between all types of abuse and all subscales of the Hopkins Symptom Checklist, including somatisation, anxiety, depression and dissociation. Their results indicate that more than 20% of the variance in dissociation and depression could be attributed to reported physical and psychological abuse experienced in childhood. Briere and Runtz (1988b) found that paternal physical abuse, in particular, was associated with somatisation and anxiety in later life. They propose that this correlation could be understood to occur as a result of increased anxiety, concomitant autonomic arousal and physical complaints that a frightened child would likely experience when suffering physical assault by a larger and stronger individual. On the basis of their findings the authors suggest that theories implying that maternal behaviours have a greater impact on the child's psychological health in later life, may be overstating the case. They also note that multiple forms of abuse tend to co-occur within families, and suggest that investigations of a single type of abuse may not always be appropriate.

Similar findings to Briere and Runtz (1988b) were reported by Walling *et al.* (1994) when they investigated physical and sexual abuse history in relation to psychopathology in women with chronic pain. They recruited three groups of female participants referred for routine gynaecological examination, which were chronic pelvic pain, chronic headache, and pain-free individuals. They found that years of education and family income were significant predictors of somatisation; poorer and less educated individuals having higher levels of somatisation. Childhood sexual abuse did not predict anxiety, depression or somatisation, after

controlling for socio-demographic factors, chronic pain status and experience of physical abuse. Physical abuse, conversely, did make a significant contribution to the prediction of psychopathology, including somatisation. The authors suggest that their results raise serious doubts about the validity of reported associations between childhood sexual abuse and female chronic pain patients, stating that the effects of sexual abuse may be confounded by the fact that such abuse often co-occurs with physical abuse. They speculate that the predictive power of physical abuse may be related to the threat and actual infliction of physical damage to the body, such direct violence not being necessarily involved in the perpetration of sexual abuse. Walling *et al.* (1994) link experiences of threat and actual harm to the manifestation of PTSD, symptoms of depression, anxiety and also 'hypervigilance...which, if turned inward toward interoceptive stimuli, could reasonably be expected to result in a heightened sensitivity to otherwise innocuous physical symptoms' (p.205). Unfortunately the potential impact of emotional abuse on later psychopathology was not assessed in this investigation. A number of studies have provided evidence of the detrimental effects of emotional abuse on mental health.

Finzi-Dottan and Karu (2006) investigated emotional abuse suffered in childhood and its relation to psychopathology in adulthood. Level of psychopathology was measured using the Brief Symptom Inventory, which contains nine subscales, one of which measures somatisation. They found a significant correlation with more severe emotional abuse being associated with higher levels of psychopathological symptoms; unfortunately they do not provide the individual correlation coefficients for the nine subscales of the BSI. The authors comment on the inherent difficulties of studying the effects of emotional abuse on

psychopathology in adulthood, including in their sample individuals who had reportedly suffered only emotional abuse but also those who had suffered emotional abuse in combination with other abusive experiences. Clearly this study is subject to the criticism that the significant associations reported might not be representative of the impact of only emotional abuse on psychopathology.

A more robust investigation was carried out by Spertus *et al.* (2003) examining the predictive value of childhood emotional abuse for both psychological and physical symptoms in women attending a primary care practice. Multiple regression analysis indicated that emotional abuse and neglect were significant predictors of somatisation, depression and anxiety, even when the effects of physical and sexual abuse were statistically controlled for. Participants were asked to estimate the number of times they had an appointment with a doctor, over the past year. They found a significant correlation between emotional abuse and neglect and the number of visits made to doctors. Although in this study, health care utilisation was not assessed directly the results do suggest that emotional abuse and neglect may have a potential impact on health care costs. The authors offer various explanations as to why emotional abuse and neglect might lead to increased health care utilisation, including the possibility that such treatment may make an individual more vulnerable to psychopathology and related physical problems, or may result in a poorer level of self-care, increasing the risk of exposure to other negative life events, and finally that emotional abuse or neglect may decrease the threshold at which health care assistance is sought.

Some researchers have indicated the importance of considering the effects of negative parenting and general family environment on long-term mental health outcomes. Schreiber and Lyddon (1998) examined psychological adjustment in adult survivors of CSA. While individuals who had been sexually abuse demonstrated significantly poorer psychological functioning than those who had not been abused, the effect of high paternal care demonstrated a significant beneficial effect on later psychological adjustment following CSA.

Fromuth (1986) investigated the impact of child abuse and parental support on psychopathology in adulthood. She found that sexual abuse history did not contribute significantly to the prediction of psychopathology, with the exception of phobic anxiety, over and above that predicted by parental support, as measured using the Parental Support Scale. She concluded that 'the long-term effects often attributed to the sexual abuse then may not be actually due to abuse per se, but rather to the family environment which often accompanies the abuse' (p.14). Another study by Lackner, Gudleski and Blanchard (2004) provides further support for Fromuth's (1986) conclusions. They investigated patients referred to a behavioural medicine clinic with a diagnosis of irritable bowel syndrome (IBS), for abuse history, somatisation and perceived parenting, assessed with the Parental Acceptance-Rejection Questionnaire. Although abuse and perceived parental style were significantly associated, only parental style was correlated with somatisation. More specifically their results indicated that maternal style did not correlate with somatisation but paternal hostility and rejection did. Lackner, Gudleski and Blanchard (2004) note the importance of assessing the broader family environment for the potential effect on somatisation. Salmon and Calderbank (1996) also examined illness behaviour in relation to childhood sexual

and physical abuse and parenting. They found that both types of abuse were related to higher health care utilisation, somatisation and poorer parenting, but contrary to the findings of Fromuth (1986) and Lackner, Gudleski and Blanchard (2004), experiences of negative parenting did not explain the association between abuse and somatisation.

Craig *et al.* (1993) carried out a two-year longitudinal study of somatisation in South London. The participants were individuals who were attending their General Practitioner for a range of difficulties. Childhood experiences were assessed using the Bedford College Lack of Care Interview, which measures parental care and experience of abuse; early loss experiences and physical illness were also considered in the study. Craig *et al.* (1993) found that a lack of parental care and childhood illness were the best predictors of somatisation.

1.16 Alexithymia and Dissociation

Many researchers have reported associations between CIT, alexithymia and dissociation, a number of these studies already having been discussed above. Research examining the relationship between alexithymia and dissociation has not yet been reviewed and will therefore now be considered.

Studies investigating the relationship between alexithymia and dissociation frequently report significant associations between the DIF subscale of the TAS-20 and dissociation, in both clinical and non-clinical populations (Elzinga, Bermond & van Dyck, 2002; Wise, Mann & Sheridan, 2000). Mason *et al.* (2005) also reported a significant association between alexithymia and dissociation in a student sample. This relationship was primarily due to the correlations between

the subscale of DIF on the TAS-20, and the DES subscales of absorption and imaginative involvement, and depersonalisation and derealisation.

Irwin and Melbin-Helberg (1997) found that the alexithymia subscales of DIF and DDF were significantly correlated with dissociation in a non-clinical sample. Grabe *et al.* (2000) reported similar findings to Irwin and Melbin-Helberg (1997) in a mixed sample of psychiatric patients and non-clinical participants. A significant positive correlation was found between the total alexithymia score, the subscales of DIF and DDF and dissociation, even after controlling for psychopathology. Contrary to other studies, Zlotnick, Shea *et al.* (1996) found no correlation between dissociation and alexithymia in a group of self-mutilating female psychiatric inpatients, although self-mutilating behaviour was associated with reports of childhood sexual abuse and higher levels of alexithymia and dissociation.

1.17 Abuse, Alexithymia, Dissociation and Somatisation

A small number of investigations have examined the associations between abuse, alexithymia, dissociation and somatisation. While more studies have considered the relationships between abuse, dissociation and somatisation, no research could be found that had specifically examined the relationships between abuse, alexithymia and somatisation. The available research will now be discussed.

Sandberg and Lynn (1992) investigated the relationships between childhood and adolescent abuse, dissociation and psychopathology, in female students. Their analysis revealed significant relationships between dissociation and all forms of abuse, including physical, psychological and sexual abuse experienced as a child,

and adolescent. No specific form of abuse was found to be uniquely predictive of dissociation, when all other abuse types were controlled for but comparison of high and low dissociation participants revealed a significantly greater level of psychopathology, including a higher level of somatisation, in the high dissociation group. The results of a study by Badura *et al.* (1997) are comparable to those of Sandberg and Lynn (1992). On this occasion, female chronic pelvic pain patients were assessed for abuse history, dissociation, somatisation, substance abuse and coping strategies. Somatisation and dissociation were found to be significantly higher in women who reported having suffered physical or sexual abuse, as compared to patients who had not been abused. Somatisation, dissociation, substance abuse and maladaptive coping styles were all positively correlated.

Pribor *et al.* (1993) examined female psychiatric outpatients for symptoms of Briquet's syndrome (somatisation disorder), abuse history, and dissociative experiences. Individuals who had been abused endorsed significantly more Briquet's syndrome symptoms than individuals who had not been abused, while levels of dissociation for individuals diagnosed with Briquet's were significantly higher than in those without this diagnosis, however after controlling for abuse this association disappeared.

Brown, Schrag and Trimble (2005) compared patients diagnosed with somatisation disorder with a group of general medical patients, for history of childhood trauma and dissociation. When compared on the basis of exposure to childhood trauma, the two groups did not significantly differ in terms of experience of physical abuse, sexual abuse, or neglect. Exposure to emotional abuse was, however, strongly associated with medically unexplained symptoms,

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representing almost 50% of the variance. Dissociation as measured by the Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D) indicated that dissociative amnesia was significantly more common in the somatisation group than the medical group. No other significant differences were found for the other subscales of the SCID-D, leading the authors to suggest that only certain features of dissociation may be of relevance for understanding medically unexplained symptoms. They therefore advise against the use of total scores on the Dissociative Experiences Scale.

Ross-Gower *et al.* (1998) recruited females referred to clinical psychology services, to test the hypothesis that dissociation would act as a mediator between childhood sexual abuse and psychopathology. They found when comparing individuals with abuse histories to those without abuse histories that sexual abuse was related to later psychological disturbance, including psychosomatic conversion, and that dissociation was found to be a complete mediator in this association. An obvious limitation of this study was the failure to measure other forms of abusive experiences, which may have had confounding effects on the results. The conclusions drawn by the researchers must therefore be considered with some degree of reservation.

Only two studies were found to have examined the associations between abuse, alexithymia, dissociation and somatisation, both with the intent to clarify or support the hypothesised features of complex PTSD. Zlotnick, Zakriski *et al.* (1996) reported significant differences between female psychiatric inpatients grouped according to whether or not they had suffered CSA. Participants who had a history of CSA scored significantly higher for somatisation, dissociation and

alexithymia, while depression failed to achieve significance in relation to sexual abuse. The authors acknowledge the potential confounding effects of other types of trauma on adult symptomatology, noting that many of the individuals who had suffered CSA had also experienced physical abuse, which was another factor that distinguished them from the women who had not been sexually abused.

McLean *et al.* (2006) examined the relationships between childhood abuse, complex PTSD and alexithymia in female outpatients treated in tertiary care mental health clinic (clinic group), and various community-based clinics (community group). No association was found between complex PTSD and alexithymia in either group. However, significant correlations were found between dissociation and alexithymia, and also between somatisation and alexithymia. Logistic regression analysis was carried out on the entire sample, to examine specific types of abuse experiences as predictors of alexithymia. The analysis revealed that paternal sexual abuse was the only significant predictor of alexithymia. Analysis for both groups individually revealed significant predictors of alexithymia in the clinic group included paternal sexual abuse and bi-parental neglect, while bi-parental neglect was the only significant predictor of alexithymia in the community group.

1.18 The Current Investigation

The current investigation aims to explore the relationship between CIT and somatisation, to expand on the findings of existing research. The design of the study involved taking into consideration a wider range of negative childhood experiences, including not only abuse but also parental style. As previously discussed a number of authors have demonstrated the importance of assessing

parenting and general family environment for their association with adult pathology (Fromuth, 1986; Lackner, Gudleski & Blanchard, 2004; Nash *et al.*, 1993). Other researchers have indicated the importance of assessing each parent's independent contribution to a child's upbringing and subsequent functioning as an adult (Draijer & Langeland, 1999; Kooiman *et al.*, 2004; Modestin, Lötscher & Erni, 2002).

Existing research has explored the relationships between alexithymia, dissociation and somatisation, however no study to date, as far as the current author is aware, has investigated the associations between CIT, alexithymia, dissociation and somatisation with the specific intent to examine whether alexithymia and / or dissociation act as mediators in the relationship between CIT and somatisation. Path model analysis would be undertaken to demonstrate the significant relationships between variables.

Noting the reported associations between a number of demographic factors and the other variables under investigation (Fink *et al.*, 1999; Lane, Sechrest & Riedel, 1998; Lipsanen *et al.*, 2000; Putnam *et al.*, 1996), the current study aimed to take into account the relevant demographics.

1.19 Study Hypotheses

The first hypothesis of the current study is that experiences of childhood interpersonal trauma (abuse and negative parenting experiences) will be predictive of somatisation in adulthood. The second hypothesis is that alexithymia and dissociation will act as mediators in the relationship between CIT and somatisation.

Chapter 2

Method

2.0 Design

This research employed a quantitative cross-sectional design, with one group of participants assessed at one time point. The participants were individuals who had been referred to Primary Care Clinical Psychology Services in the region. The design of the current study was influenced by the recommendations of Fry (1993) in his review of research examining childhood sexual abuse and physical illness in adulthood. He concludes that research should consider multiple variables as potential factors in the genesis of problems in later life. He explains that the impact of family background should be evaluated and that childhood sexual abuse may only be 'a marker for more general childhood neglect' (p.100). Therefore multiple independent variables were incorporated into the study including, exposure to various types of childhood abuse; parental style, in recognition of the influence that parenting has on a child's life; alexithymia; dissociation; and four demographic variables which were age, gender, highest level of educational attainment and socio-economic status. Finally the dependant variable was the level of somatisation as measured by the somatisation scale of the Revised Symptom Checklist-90 (SCL-90-R).

2.1 Power and Sample Size Calculation

The determination of sample size, to achieve statistically significant results, was obtained from calculations provided by Cohen (1992). All calculations were made on the basis of a power value of 0.80, as selecting a smaller power specification increases the risk of making a Type II error, while a larger power

value would produce an unfeasibly large, and therefore impractical, sample size (Cohen, 1992). A medium effect size was assumed for the current study, and a significance level of 0.05. Cohen's (1992) calculation assuming a medium effect size, a significance level of 0.05 and a power value of 0.80 indicates a required sample size of 107 in order to carry out correlation / multiple regression analysis on eight independent variables.

2.2 Ethical Approval

The first submission to local ethics committee was made on 15th November 2006 for discussion by the committee on the 15th December 2006. This ethical application was rejected on the basis of a number of concerns that the committee had regarding the research. Changes were made to the methodology to comply with the recommendations made by the committee as far as was practically possible. The procedure as described in the first ethics application indicated that participants would be given the option of whether to return the consent form and questionnaires, sealed in separate envelopes, to their own Clinical Psychologist or by post in a prepaid envelope. The committee objected to this procedure, indicating that the research should be 'conducted with the knowledge and support of the patients'/clients' therapist' (personal communication, 21st December 2006), and that the consent pack should be entirely separate from the questionnaire pack. The methodology was therefore changed so that participants' only means of returning the consent form and questionnaires was directly to their own psychologist, while the questionnaire pack would not be given out until the consent pack had been returned by participants at a subsequent appointment.

A further amendment that was made to the methodology concerned the estimation of 30-45 minutes to complete all questionnaires, which the ethics committee judged to be a 'gross underestimate' (personal communication, 21st December 2006). The principal researcher therefore asked five individuals who were unfamiliar with the questionnaires to time themselves while completing all items. The longest time taken to complete the questionnaires was 20 minutes; consequently the participant information sheet was modified with the new estimated time for completion being 40-60 minutes, to provide a considerable margin of time in the estimation.

The one outstanding issue related to the location and conditions under which participants would complete the research questionnaires. The committee had indicated that they did not feel that it was appropriate for participants to complete the questionnaires at home, in the event that any participant became upset, and that therefore participants should complete the questionnaires in their local Clinical Psychology Department, with a qualified member of staff being present to manage any arising distress. A revised ethical submission was made to the committee for discussion at the 9th February meeting, in which it was stressed that this was an unnecessary precaution, in light of the fact that participants would be thoroughly assessed to ascertain their risk and vulnerability prior to being asked to participate. The participants would also be actively engaged in psychological treatment; having regular weekly to fortnightly contact with their own Clinical Psychologist, who would be able to monitor their clients for any distress arising from their participation in the research, which could in turn be address during routine clinical contact.

The Participant Information sheet (Appendix 3) provided participants with the contact details for the principal researcher, and both the academic and clinical supervisors, should participants feel that they required additional support. The telephone number of the Samaritans' was also listed as a point of contact in the event of a crisis arising during out of office hours. The choice as to where the questionnaires were completed would be given to the individual participant, either in the Clinical Psychology Department, with immediate support being available, or at home. The ethics committee were informed that Clinical Psychologists could not be expected to remain with their clients while they completed the questionnaires, as this would place an unreasonable demand on their already busy work schedules. It was also entirely unfeasible for the principal researcher to be in attendance with all participants, as the research would be carried out over three Primary Care Clinical Psychology departments in the region, at locations up to 80 miles apart.

Following the meeting of the 9th February, a provisional favourable opinion was given as the committee were satisfied with all the changes, however they where still insistent that all participants complete the questionnaires in the Clinical Psychology Departments with the principal researcher in attendance. Both academic and clinical supervisors then wrote to the committee in support of the proposed methodology, stressing that the committee's recommendation regarding completion of the research packs was unnecessary, and was now seriously jeopardising the whole study. These letters were considered by the committee at their next meeting on the 9th March 2006. The ethics committee aim to communicate their decisions within a fortnight of the relevant meeting. When no further information was forthcoming with regard to the outcome of this meeting,

the principal researcher contacted the ethics' committee administrator by email on the 28th March. An email reply, received on the same day, offered an apology for the delay and confirmed that full ethical approval had now been given to the research. The letter confirming this decision was promised to follow shortly. Due to the pressure of time, an initial batch of 80 research packs was prepared and distributed to two of the Clinical Psychology departments; the third department having indicated that they would be unable to recruit participants to the study until the beginning of June, due to other research commitments.

When the letter of formal approval had still not arrived by the 10th April, the principal researcher again contacted the administrator by email. Another apology for the delay was received the same day, followed by a further email on the 11th April indicating that the administrator had misplaced the checklist accompanying the revised ethical submission made in February, which meant that she was unable to generate the letter of approval. This document was emailed to her again on the 12th April. The formal letter of ethical approval was finally emailed to the principal researcher on the 19th April 2007. However, the committee had again changed their opinion regarding the inclusion of the estimated time taken to complete the questionnaires, stating that: 'Some people have difficulty filling in questionnaires and should be allowed to decide for themselves how long it will take them. Experience shows that statements as to how long it should take them rather than does take them actually makes some people feel uncomfortable and even inadequate.' (personal communication, 19th April 2007). They had also decided that the Participant Information Sheet should be on headed notepaper. The research packs distributed to the two Clinical Psychology Departments were recalled to make the necessary changes to the Participant Information sheet. The

submission of these changes to the committee produced the final letter of ethical approval on the 25th April 2007 (Appendix 1).

Approval for the research was given on the basis that the participants' own clinical psychologist be fully aware of their involvement in the research. Clearly this meant that each individual's participation was not entirely anonymous, however the procedures for participation were considered by the ethics committee to be appropriate; allowing the primary care psychologists and the principal researcher to monitor, and if necessary to attend to any distress experienced by patients following their participation.

While actual participation in the research was not anonymous, issues of confidentiality were not compromised. All participants were assigned a unique participant number; the information linking each individual to their participant number being stored on a password protected computer file, to which only the principal researcher had access. Participants were assured of the complete confidentiality of their responses to the items in the questionnaires; even the participant's own clinical psychologist was not given access to this information, unless the participant had indicated, via a tick box on the Demographic Details Questionnaire (Appendix 11), that they wanted this to happen.

2.3 Informed Consent

Due to the emotive nature of the Child Abuse and Trauma Scale questionnaire (CAT: Kent & Waller, 1998; Sanders & Becker-Lausen, 1995), considerable thought was given to the information provided in the Participant Information Sheet (Appendix 3). A recommendation made by Newman *et al.* (1999) which

highlighted the importance of obtaining *informed* consent when carrying out trauma related research was followed; this entailed warning potential participants that completing the questionnaires may be more distressing than they might anticipate, especially for individuals who had suffered interpersonal trauma in childhood. The Participant Information Sheet was included in the Consent Pack, which was given to potential participants, at least, one week before they were given the Questionnaire Pack to allow each individual time to consider their involvement in the study. An additional reminder of the potential distress that the questionnaires may cause was also given in the covering letter (Appendix 5) enclosed with the Questionnaire Pack.

2.4 Eligibility Criteria

The participants in the research were individuals who had been referred to Primary Care Clinical Psychology Departments in the region, referrals largely being made by General Practitioners or Psychiatrists. Referrals received by the psychology departments are discussed at weekly allocation meetings to consider whether they meet the eligibility criteria for the local area clinical psychology service (May 2006). Table 2.0 below lists the eligibility criteria for primary care psychology.

Table 2.0 Local Area Clinical Psychology Service: Eligibility Criteria (May 2006)

ELIGIBLE: Individuals in age range 18-64 years with diagnosed mild to moderate psychological disorders likely to respond to a brief time-limited period of psychological treatment e.g. anxiety disorders, PTSD & OCD not previously treated, mild to moderate depressive disorders, bulimia nervosa with no physical complications.
NOT ELIGIBLE: Individuals with presenting problems which are primarily - ❑ severe or enduring mental illness (contacts required beyond 20 sessions) ❑ not a diagnosable psychological disorder ❑ where psychological disorder is central to offending behaviour / recent contact with Criminal Justice System ❑ severe personality disorders ❑ acquired brain injury ❑ associated with a physical health condition ❑ primary addiction problems ❑ anorexia nervosa ❑ psychosexual disorders ❑ due to social factors

2.5 Participants

A total of 456 referrals were accepted by the two Primary Care Clinical Psychology Departments. Site A accepted 271 referrals, while Site B accepted 185 during the recruitment period of the current study. The manner in which potential participants were recruited to the study means that it is not possible to estimate the number of clients who were actually invited to participate. Forty-one individuals did participate in the research; Site A recruited 37 individuals (13.7% of Site A's referrals), while Site B recruited only four (2.2% of Site B's referrals) Due to incomplete sets of data for three participants, data from only 38 individuals was included in the final analysis. The participants were 26 females and 12

males, with an age range of 17 to 57 (mean age 37, SD 12.7). Participants reported their highest level of educational attainment. Ten participants (26.3%) had been educated to up secondary school, 15 (39.5%) received college education, 6 (15.8%) attended university to undergraduate level, while 7 (18.4%) received postgraduate education. The socio-economic status of the study participants was ranked on the DEPCAT scale (Medical Research Council Public Health & Sciences Unit, 2004) of 1 (most affluent) to 7 (most deprived). The composition of participant socio-economic status is show in table 2.1 below.

Table 2.1 Socio-economic Composition of Sample

DEPCAT Rank	**Number of Participants**	**Percentage of Participants**
1 most affluent	6	15.8
2	11	28.9
3	10	26.3
4	0	0
5	8	21.1
6	1	2.6
7 most deprived	2	5.3

2.6 Measures

Child Abuse and Trauma Scale (CAT: Kent & Waller, 1998; Sanders & Becker-Lausen, 1995)

The CAT scale (Appendix 6) is a 38-item self-report questionnaire, which measures maltreatment experienced in childhood and adolescence. It is a retrospective measure that asks respondents to subjectively rate the frequency of abusive and traumatic incidents experienced. Each item of the CAT is rated on a five-point scale, ranging from 0 (*never*) to 4 (*always*), with 5 of the items being scored in reverse.

The original version of the CAT scale was first trialled on psychiatric adolescent inpatients, to test the hypothesis that an association would exist between the level of childhood interpersonal trauma experienced and the level of dissociation (Sanders & Giolas, 1991). Indeed a significant correlation ($r = .44$; $p < .001$) was found between the CAT scores and dissociation scores, as measured by the Dissociative Experiences Scale (DES: Bernstein & Putnam, 1986).

Following some modifications to the scale, the revised CAT was administered to college students to determine its factor structure and psychometric properties (Sanders & Becker-Lausen, 1995). Three subscales emerged from the factor analysis; which were labelled 'negative home atmosphere/neglect', 'sexual abuse' and 'punishment'. The scale was found to be reliable, with good internal consistency (Cronbach's alpha = .90), and a test-retest reliability of .89 ($p = <$ .0001). As had been found with the psychiatric inpatient population, the student CAT scores correlated significantly with scores on the DES ($r = .33$; $p = < .0001$).

Further research was carried out, using another group of student respondents, to examine the CAT scale's relation to other outcome variables, including: the Beck Depression Inventory; the Object Relations Scale, which measures difficulty with interpersonal relationships; the Life Experiences Survey; and a checklist of negative events specific to experiences of victimisation (Sanders & Becker-Lausen, 1995). CAT scores were found to correlate with: depression ($r = .40$; $p = < .001$); difficulty with interpersonal relationships ($r = .37$; $p = < .001$); and negative life events ($r = .29$; $p = < .001$), thereby demonstrating the scale's predictive validity.

The CAT was further extended, with the development of a subscale measuring 'emotional abuse' (Kent & Waller, 1998). This subscale contains seven items, selected on the basis of their face validity from within the existing CAT scale. Six of these items had not previously been included in any of the three subscales, while the other item was selected from the 'negative home atmosphere/neglect' subscale. The reliability and validity of the CAT and the new subscale were then tested using a group of female students. Kent and Waller (1998) found the CAT scale to have a high internal consistency, with a Cronbach's alpha of .90, the same result found by Sanders and Becker-Lausen (1995). The 'emotional abuse' subscale also had high internal consistency (Cronbach's $\alpha = .88$).

The CAT scale was selected for use in the current study for a number of reasons. Firstly, as a self-report measure the CAT scale offered a greater opportunity to recruit an adequate number of participants to achieve statistical power, as compared to the time-consuming process that individual interviews would have required. The use of a self-report measure on such an emotive subject was also

considered to be appropriate, as participants were also patients currently attending their local clinical psychology department, thereby enabling their mental state to be monitored, with any distress resulting from participation being addressed in session. Furthermore, the CAT items do not require respondents to admit to graphic details of abusive experiences, as the format of items is mild and less intrusive than many other similar questionnaires. This gentler approach was taken in an attempt to reduce the likelihood that respondents would feel stigmatised by their answers, which the authors hoped would decrease the level of under-reporting, while not encouraging over-reporting due to 'a complaining response style' (Becker-Lausen, Sanders & Chinsky, 1995, p.563). The relative brevity of the CAT scale and its assessment of four subtypes of abuse were seen as advantages that the CAT had over a number of other trauma and abuse questionnaires (Roy & Perry, 2004). Finally, the psychometric properties of the CAT scale indicate that it is a valid and reliable according to criteria suggested by Myers and Winters (2002).

Parental Bonding Instrument (PBI: Parker, Tupling & Brown, 1979)

The PBI (Appendix 7) is a 25-item self-report questionnaire, which measures parental style as remembered retrospectively by the individual for the first 16 years of their life. Respondents are required to indicate to what extent each item applies to their parents' behaviour or attitude, on a four-point scale ranging from 0 (*very unlike*) to 3 (*very like*), with 12 of the items being scored in reverse. All 25-items are rated twice to obtain an account of bonding with each parent separately. The PBI contains two subscales, which are 'care' & 'overprotection', with the most favourable parental style denoted by a high score for 'care' and a low score for 'overprotection' (Parker, Tupling & Brown, 1979)

The PBI is a measure that has been used extensively to assess parental style and has been found have good internal consistency with split-half reliability of .88 ($p < .001$) for the 'care' subscale, and .74 ($p < .001$) for the 'overprotection' subscale. The stability of the PBI has been demonstrated over a 20-year period with factors such as gender, life events, and experience of depressive illness showing no significant impact on individuals' perceptions of how they were parented; the reliability of PBI scores has also remained consistent despite variation in respondents' current mood state (Wilhelm *et al.*, 2005). As a test of concurrent validity Parker, Tupling and Brown (1979) employed independent raters to interview participants using a semi-structured interview, after which 'care' and 'overprotection' scores were estimated for each parent. The independent rater scores were then correlated with those obtained from self-report on the PBI. The Pearson correlation coefficient for 'care' was found to be .77 ($p < .001$), and .48 ($p < .001$) for 'overprotection'. The predictive validity of the PBI has also been demonstrated in clinical and non-clinical populations (Richman & Flaherty, 1987; Warner & Atkinson, 1988; Zweig-Frank & Paris, 1991).

The rationale for including the PBI in the current study was it provides a separate account of parental style for both mother and father, therefore enabling an assessment to be made of the impact that divergent parental styles may have on psychopathology in adulthood.

Toronto Alexithymia Scale (TAS-20: Bagby, Parker & Taylor, 1994a, 1994b)

The TAS-20 (Appendix 8) is a 20-item self-report questionnaire that measures alexithymia. Items are rated on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), although 5 items are scored in reverse. The TAS-

20 contains 3 subscales, which are 'difficulty identifying feelings' (DIF), 'difficulty describing feelings' (DDF), and 'externally oriented thinking' (EOT) (Bagby, Parker & Taylor, 1994a). The TAS-20 has an established cut-off score of ≥ 61, indicative of alexithymia.

The TAS-20 has been shown to have acceptable internal consistency (Cronbach's alpha = .81) and test-retest reliability over a three-week period (r = .77), (Bagby, Parker & Taylor, 1994a). The convergent and discriminant validity of the TAS-20 was examined by Bagby, Parker and Taylor (1994b) with comparisons made between related and unrelated constructs. Significant correlations were found in the directions predicted between the TAS-20, the Need for Cognitions Scale, the Psychological Mindedness Scale, and subscales of the NEO Personality Inventory. Concurrent validity was tested by comparison of behavioural medicine outpatients' scores on the TAS-20, to observer ratings of alexithymia in the same patients (Bagby, Parker & Taylor, 1994b). Strong correlations between the TAS-20 scores and the observer ratings were supportive of the concurrent validity of the scale.

Acceptable levels of internal consistency have also been demonstrated for the three TAS-20 subscales, with Cronbach's alpha of .78 for DIF, .75 for DDF and .66 for EOT (Bagby, Parker & Taylor, 1994a). The TAS-20 has however been criticised by Kooiman, Spinhoven and Trijsburg (2002) for failing to measure paucity of fantasy, one of the defining characteristics of alexithymia, and for the EOT subscale's lack of reliability. They also query the questionnaire's criterion validity, which as they point out has implications regarding the self-report format of the TAS-20 and the limited ability of alexithymic individuals to self-reflect.

They recommend that the TAS-20 be used alongside other measures of alexithymia, however this was not practical for the current study, with respect to the number of other variables being studied and the requirement for power. Lumley *et al.* (2005) however, investigated the relationship between various measures of alexithymia and emotional ability, using various assessment formats including self-report (TAS-20), and observer and interview-ratings. They found significant correlations between the different formats assessing alexithymia, which provides additional support of the construct validity of the TAS-20.

The TAS-20 was selected for inclusion in the current study as the most extensively used and well validated measure of the alexithymia construct.

Dissociative Experiences Scale-II (DES-II: Carlson & Putnam, 1993)

The DES-II (Appendix 9) is a 28-item self-report questionnaire, which measures dissociation. The DES-II items are the same as in the original DES, but the method of scoring has been simplified, changing from a visual analogue scale to a numbered format. The DES-II requires respondents to indicate the percentage of time that they have dissociative experiences on a rating scale ranging from 0 to 100 percent, in increments of 10. Various factor analytic studies have attempted to derive subscales from the dissociation construct, with apparently three factors emerging. These factors were labelled, 'amnestic dissociation' (AD), 'absorption and imaginative involvement' (AII) and 'depersonalization and derealization' (DD) (Carlson *et al.*, 1991). There has however, been some contradictory evidence over the items that comprise these factors, and further debate as to whether there are indeed three subscales as opposed to a one-dimensional factor structure, particularly when comparing the results obtained from clinical and non-

clinical populations (Carlson *et al.*, 1991, cited in Carlson & Putnam, 1993; Ross, Joshi & Currie, 1991). The reliability of the three subscales as originally described by Carlson *et al.* (1991) has not been published, a fact that was confirmed in a personal communication received from Eve Bernstein Carlson (11th October 2007), therefore considerable caution is necessary when interpreting data relating to the DES subscales. It has been suggested that the difficulty of deriving subscales has occurred due to the relatively rare occurrence of the dissociative experiences described by the DES items, and that therefore the DES 'will *reliably* measure only the general dissociation factor' (Carlson & Putnam, 1993, p.21). Various researchers have used different cut-off scores for the DES however, the authors of the DES recommend a cut-off score for total dissociation of ≥ 30 (Carlson & Putnam, 1993).

The scale has been shown to have good internal consistency with a split-half reliability coefficient of .83 (Bernstein & Putnam, 1986), and a Cronbach's alpha of .95 (Frischholz *et al.*, 1990). Bernstein and Putnam (1986) also found the DES to have acceptable test-retest reliability (r = .84) over retest intervals of 4 to 8 weeks. Research by Frischholz *et al.*, (1990), confirmed the ability of the DES to distinguish between individuals who dissociate and those who do not, while a study by Steinberg, Rounsaville and Cicchetti (1991) demonstrated that the DES could distinguish between patients with dissociative disorders and patients with non-dissociative disorders.

Symptom Checklist (SCL-90-R: Derogatis, 1994)

The level of somatic symptomatology was measured using the somatisation subscale of the SCL-90-R (Appendix 10). The subscale consists of 12-items that relate to commonly reported somatic symptoms. Respondents are required to rate the degree to which a problem has distressed them over the last seven days, indicating this on five-point Likert scale ranging from 0 (*Not at All*) to 4 (*Extremely*).

The SCL-90-R is a widely used measure that can be administered to both clinical and non-clinical populations. The somatisation subscale has been found to have acceptable internal consistency (coefficient alpha = .88) and test-retest reliability ranging from $r = .68$ over a 10 week period (Horowitz *et al.*, 1988), to $r = .86$ over one week (Derogatis, Rickels & Rock, 1976). The convergent and discriminant validity of this subscale has also been found to be acceptable. Derogatis, Rickels and Rock (1976) compared the checklist to the well-established self-report questionnaire the Minnesota Multiphasic Personality Inventory (MMPI). They found that the somatisation subscale correlated significantly at a 1% level with the relevant standard clinical scales of the MMPI (Hypochondriasis, $r = .57$; Conversion Hysteria, $r = .48$) and also with the Wiggins content scales (Organic Symptoms, $r = .62$; Poor Health, $r = .58$) and the Tryon cluster scale (Bodily Symptoms, $r = .66$) of the MMPI. Correlations coefficients below .40 were not reported, indicating the subscale's discriminant validity (Derogatis, Rickels & Rock, 1976).

De Gucht and Heiser (2003) raise concerns about symptom checklists that only enquire about the presence of somatic symptoms, and not whether an organic

cause has been established. They indicate that such a method is likely to lead to an overestimation of somatisation. Other researchers have tried to resolve this difficulty by instructing respondents to only endorse symptoms that have no obvious organic cause (Deary, Scott & Wilson, 1997; Rief & Hiller, 2003). De Gucht and Heiser (2003) are critical of this procedure too however, suggesting that people are more likely to ascribe symptoms to physical rather than psychological causes, resulting in the underestimation of somatisation. This suggestion is contradicted by Wise and Mann (1995), their findings being of particular relevance for the current study. They investigated the attribution of somatic symptoms in psychiatric outpatients, discovering that somatic symptom reporting was strongly correlated with alexithymia. Psychiatric patients scoring high on the TAS were also more likely to attribute their somatic symptoms to a psychological cause.

De Gucht and Heiser (2003) stress that the only valid way to assess somatisation is to carry out a physical examination and review patients' medical notes. Such procedures were not practically feasible in the current study however a modification was made to the SCL-90-R, with the addition of a question asking participants to indicate if they had been given a formal diagnosis or knew why they had symptoms that they had endorsed on the questionnaire. For example, if a participant indicated that he or she had experienced hot or cold spells to a moderate degree that week, this would normally have received a score of two, however if they stated that the reason for this was due to a bout of flu, or any other obviously organic cause, then a score of zero would be assigned. Similarly if participants indicated that their hot and cold spells were due to a panic attack, this was also scored as zero.

Demographic Details Questionnaire

A demographic questionnaire was constructed that requested participants' age, gender, highest level of education and postcode sector. The demographic factors were selected on the basis of their relevance to the other variables being studied (Fink *et al.*, 1999; Lane, Sechrest & Riedel, 1998; Lipsanen *et al.*, 2000; Putnam *et al.*, 1996). Only the first two letters and all numbers of the postcode were requested in order to determine socio-economic status, without compromising participants' anonymity. Socio-economic status was determined using the Carstairs scores for Scottish postcode sectors from the 2001 census (Medical Research Council Social & Public Health Sciences Unit, 2004). Scores represent a rank ordering of socio-economic status, a score of one representing the most affluent status, while seven indicates the most deprived status.

Format of Questionnaires

It was anticipated that most participants would wish to complete the questionnaires at home, without the assistance of the researcher. The layout of the questionnaires was reformatted to present a consistent appearance, in an attempt to make the method of rating the different questionnaires less confusing. The questionnaires were re-typed using the same font and similar tabulated layout, without changing the content or wording of the questionnaires. Participants were required to indicate their responses by ticking boxes on the CAT, PBI, TAS-20, SCL-90-R (the exception being the diagnostic question) and the demographic questionnaire (exceptions being age and partial postal code). On the DES-II, participants were asked to indicate their response by circling a number.

The order in which the questionnaires were completed was not within the control of the principal researcher, however the questionnaires were put into the envelopes in a randomised order in an attempt to minimise potential ordering effects of completing the questionnaires.

2.7 Procedure

A presentation of the research was given to two of the Adult Primary Care Clinical Psychology Departments within the local area, to inform clinicians of the background to the study, the aims and methodology. Following this presentation, two envelopes were then placed within the files of all new referrals made to Primary Care Clinical Psychology Services. The first envelope, termed the Consent Pack, contained a letter of invitation (Appendix 2), the Participant Information Sheet (Appendix 3) and the Consent Form (Appendix 4), while the second envelope, termed the Questionnaire Pack, contained the six research questionnaires.

All individuals referred and accepted onto the Primary Care Clinical Psychology caseload could be considered for inclusion in the current study. Individuals attending Clinical Psychology, during the recruitment period of the study, received a routine clinical assessment as normal. In addition, however during the initial contacts made with patients, clinicians were also asked to use their own professional judgement of an individual's perceived vulnerability and current mental state, to decide whether they could be asked to participate in the research. If clinicians assessed an individual to be suitable then the potential participant would receive a brief introduction to the research from their clinician, and if

indicating their willingness to consider participation they were given a Consent Pack to take home to read.

On returning a completed Consent Pack, participants were then given the option of completing the questionnaires at home or in the Clinical Psychology Department. If however, the participant's own clinician felt that their patient should receive additional support while completing the questionnaires, due to the participant's perceived vulnerability, then the principal researcher would arrange to be in attendance during an individual's completion of the questionnaires, within the department. If participants took the Questionnaire Pack home, they were asked to return the completed questionnaires to their own Clinical Psychologist, in a sealed envelope. All participants elected to complete the questionnaires at home.

The third adult clinical psychology department had indicated that they would be unable to recruit clients to the current study until June 2007, due to ongoing research within the department. The principal researcher contacted this department again at the end of May to ask for their assistance, however this request was again refused as recruitment to the other study had been much slower than anticipated. The third department therefore did not take part in the current study.

2.8 Statistical Analyses

Statistical analyses of the data were conducted using SPSS for Windows Version 14. The small sample size meant that the statistical power for any analysis was compromised, which in turn limited the number of variables that could appropriately be included in any statistical modelling techniques, therefore correlation analyses were used to the select the most appropriate variables for inclusion in the path model. Regression techniques were then used to test mediation.

Chapter 3

Results

3.0 Intended Statistical Analysis

The first aim of the study was to assess whether CIT predicts somatisation, which was achieved using correlation analyses. Due to the small sample size the first hypothesis was tested using both parametric and nonparametric techniques. The second aim was to establish whether alexithymia or dissociation operate as mediators in the relationship between CIT and somatisation, which required the construction of a path model. All explanatory variables, including the demographic variables, would have been considered in the model had the sample size been sufficient to ensure adequate power. However, as the required sample size was not achieved, this restricted the number of variables that could be included in the model. A sample size of 38 was achieved, therefore assuming a large effect size, a power level of .80 and a significance level of .05 allows four variables to be assessed in one statistical model (Cohen, 1992). Therefore only a subset of the total number of variables could be considered in one model. The selection of the subset of variables was made on the basis of the strength of correlations between explanatories and the dependant variable.

3.1 Prevalence Rates

Unfortunately there are no established cut-off scores for the CAT scale, therefore the prevalence of most forms of abuse and neglect cannot be provided. Establishing cut-off scores for punishment and emotional abuse are problematic, requiring decisions to be made as to what constitutes reasonable chastisement and at which point such behaviour becomes abusive. Such judgements vary greatly

with socio-cultural differences, while attitudes to what is reasonable parental discipline change over time. In the case of sexual abuse however, it is clear that any score above zero on this subscale represents an abusive experience. Therefore based on this criterion, 30.8% of female participants and 25% of male participants reported having been sexually abused in childhood. These figures are in line with previous reported prevalence rates of CSA in psychiatric populations (Berenbaum, 1996; Jacobson & Richardson, 1987; Shack *et al.*, 2004; Wurr & Partridge, 1996).

The prevalence of alexithymia in the current study was found to be 42.1%, which is slightly higher than the prevalence rate of between 37% to 39.8% previously reported for psychiatric outpatients (Taylor *et al.*, 1992; Wise, Mann & Sheridan, 2000).

The prevalence rate for dissociation in the study sample was 21.1%, which is higher than previous estimates of dissociation in psychiatric outpatients of 8% to 15.3% (Dominguez, Cohen & Brorn, 2004; Şar *et al.*, 2000).

No cut-off scores are provided for the somatisation subscale of the SCL-90-R, as this scale was not designed to be a diagnostic tool. Other studies that have examined the prevalence rates of somatisation have done so on the basis of a formal diagnosis being made for somatoform disorders. The application of formal diagnoses of somatisation disorder was not within the scope of the current study. Thirty-three out of 38 participants (86.8%) scored above zero on the SCL-90-R; the mean score for somatisation was 8.08, with a SD of 6.82. To put this finding in context however, it is known that the majority of individuals will experience some somatic discomfort or symptom much of the time, with only a few

individuals consulting their doctor regarding these everyday sensations (Banks *et al.*, 1975). Kellner (1991) comments that 'bodily discomfort is the normal experience even in good physical health, and perhaps a fortunate few do not experience some somatic symptoms' (p.190)

3.2 Descriptive Statistics

The mean, standard deviation, minimum and maximum values for all variables, with the exception of the categorical variables, are provided in Table 3.0 below.

Table 3.0 Descriptive Statistics

Variable	N	Mean	SD	Minimum	Maximum
Sexual Abuse	38	1.63	4.14	0	21
Punishment	38	8.79	4.73	1	21
Emotional Abuse	38	9.74	5.48	2	20
Neglect / Negative Home Environment	38	16.66	11.90	0	40
Total Abuse	38	41.84	29.28	7	124
Mum Care	38	23.84	10.19	1	36
Mum Overprotection	38	13.29	7.50	4	34
Dad Care	38	19.03	11.64	0	36
Dad Overprotection	38	12.50	8.08	1	32
Difficulty Identifying Feelings	38	21.03	7.52	7	34
Difficulty Describing Feelings	38	15.84	5.00	5	24
Externally Oriented Thinking	38	18.74	4.42	10	29
Total Alexithymia	38	55.61	14.13	26	85
Amnestic Dissociation	38	8.28	9.63	0	36.3
Absorption & Imaginative Involvement	38	24.80	19.83	0	77.8
Depersonalisation / Derealisation	38	8.21	11.62	0	45.0
Total Dissociation	38	16.89	13.27	0.4	50.0
Somatisation	38	8.08	6.82	0	28
Age	38	37.16	12.68	17	57

3.3 Distribution of Data

Due to the small sample size it was considered important to try to normalise each variable as far as possible, in order to minimise the impact of any outlying values. All variables were transformed using natural log (Ln) and square root (SQRT). Each variable was then examined on an individual basis to assess whether untransformed, Ln or SQRT achieved closest approximation to normality, using the Shapiro-Wilk test for normality (Appendix 12). It revealed that: *mum care; dad care; DIF; DDF; alexithymia total score;* and *age* were closest to normality when untransformed. Of these variables: *mum care; dad care;* and *age* did not achieve normality.

Sexual abuse; total abuse; mum overprotection; and *DD* were closest to normality under Ln transformation. Of these: s*exual abuse* and *DD* did not achieve normality. The variables that came closest to normality under SQRT transformations included: *punishment; emotional abuse; neglect; dad overprotection; EOT; AD; AII; dissociation total score;* and *somatisation.* Only *emotional abuse* and *AD* failed to achieve normality using SQRT.

Categorical data measures were captured for *gender, education* and *socio-economic status* and as such were not assessed for normality. Due to the small sample size only clinically relevant variables were considered for inclusion in the path model; the demographic variables, including *age*, were excluded from this model.

3.4 Testing Hypothesis One

The first hypothesis was that experiences of childhood interpersonal trauma, that is abuse and negative parenting experiences would predict somatisation.

Correlation analyses were used to investigate the first hypothesis. Due to the small sample size and departure from normality for 6 out of the 18 continuous variables, excluding *age*, both parametric (Pearson) and non-parametric (Spearman's Rho) techniques were used.

Pearson Correlation Analysis (Appendix 13)

Correlation analysis was carried out between somatisation and abuse, and somatisation and parenting style. Pearson correlations revealed statistically significant positive correlations between somatisation and the following subscales of the CAT: *punishment* ($r = .452$, $p = .004$); *emotional abuse* ($r = .352$, $p = .030$); and *neglect* ($r = .393$, $p = .015$). No association was found between *somatisation* and *sexual abuse* ($r = .054$, $p = .748$), however a significant positive correlation was observed between *somatisation* and *total abuse score* ($r = .407$, $p = .011$). *Punishment* had the strongest association with *somatisation.*

Examination of *parental style* in relation to *somatisation* revealed no statistically significant results for either *maternal* or *paternal parenting style*.

Spearman Correlation Analysis (Appendix 14)

The non-parametric correlations were undertaken on the same basis as the parametric correlation analysis. *Punishment* ($r = .452$, $p = .004$); *emotional abuse* ($r = .371$, $p = .022$); *neglect* ($r = .388$, $p = .016$); and *total abuse score* ($r = .407$,

p = .011) were all found to be significantly positively correlated with *somatisation*. In line with the parametric analysis, *sexual abuse* (r = -.040, p = .810) was not associated with *somatisation*.

Contrary to the parametric analysis, *mum care* (r = -.336, p = .039) was negatively correlated with *somatisation*. As this finding was not consistent with the parametric analysis it should be interpreted with caution.

3.5 Testing Hypothesis Two

The second hypothesis was that alexithymia and dissociation would act as mediators in the relationship between CIT and somatisation. The second hypothesis was tested using regression analysis to construct a path model, based on Kenny's (2006) analytical approach and the Sobel (1982) test of mediation. As previously noted, due to the small sample size it was necessary to select a limited number of both initial and mediator variables for inclusion in the model. Selection of these variables was made on the basis of having consistently strong parametric and nonparametric correlations between the relevant variables.

Selection of Initial Variable

The above correlation analyses had established that all forms of abuse, with the exception of sexual abuse, were associated with somatisation, whilst negative parenting experiences were not consistently related to somatisation. *Punishment* had the strongest association with *somatisation*, in the correlation analysis that was used to test hypothesis one, therefore *punishment* was selected for inclusion in the path model. This approach for selecting the initial variable was also taken by Offen, Thomas and Waller (2003). Negative parenting experiences were not

included in the path model as they were not found to have a robust relationship with *somatisation* in both parametric and nonparametric analyses.

Selection of Mediator Variable

In order to select potential mediators for inclusion in the path model correlation analyses were again used. Such variables must be correlated with both the initial and outcome variables.

Pearson Correlation Analysis - Dissociation (Appendix 13)

Correlation analysis revealed significant correlations between *punishment* and *AD* ($r = .516$, $p = .001$), *AII* ($r = .434$, $p = .006$), and *total dissociation score* ($r = .502$, $p = .001$). The *DD* subscale ($r = .291$, $p = .076$) was not significantly associated with *punishment*.

All of the dissociation subscales and *total dissociation score* were significantly correlated with *somatisation*: *AD* ($r = .468$, $p = .003$), *AII* ($r = .460$, $p = .004$), *DD* ($r = .351$, $p = .030$), and *total dissociation score* ($r = .500$, $p = .001$).

Pearson Correlation Analysis - Alexithymia (Appendix 13)

None of the *alexithymic subscales* or the *total alexithymia score* were significantly correlated with *punishment*.

The *DIF* ($r = .595$, $p = .000$), *DDF* ($r = .454$, $p = .004$), and *total alexithymia score* ($r = .567$, $p = .000$) were significantly associated with *somatisation*. The *EOT* subscale was not found to be significantly correlated with *somatisation* ($r = .277$, $p = .092$).

Spearman Correlation Analysis – Dissociation (Appendix 14)

The non-parametric correlations demonstrated significant associations between *punishment* and *AD* (r = .507, p = .001), *AII* (r = .386, p = .017), and *total dissociation score* (r = .454, p = .004). The *DD* subscale (r = .288, p = .079), again, was not significantly correlated with *punishment*.

The *AD* (r = .491, p = .002), *AII* (r = .473, p = .003), and *total dissociation score* (r = .502, p = .001) were significantly correlated with *somatisation*, while the *DD* subscale was not (r = .313, p = .056).

Spearman Correlation Analysis – Alexithymia (Appendix 14)

No significant nonparametric correlations were found between *punishment* and any of the *alexithymia scores*.

All the subscales of alexithymia and the *total alexithymia score* were significantly correlated with *somatisation*: *DIF* (r = .561, p = .000), *DDF* (r = .402, p = .012), *EOT* (r = .340, p = .037), *total alexithymia score* (r = .541, p = .000).

Summary of Mediator Selection

A decision was made to include *AD* in the path model, as this subscale was consistently found to have the strongest correlation with *punishment* in both parametric and nonparametric analyses. However, due to the uncertainty over the reliability of the dissociative subscales, *total dissociation* was also selected as a potential mediator having the second strongest correlation with *punishment*.

The correlations between the dissociation scores and *somatisation* were strongest for *total dissociation*, followed by *AD*, which further justifies the selection of *total dissociation* in the path analysis in addition to *AD*.

As alexithymia was not significantly associated with the *punishment* it was discounted as a potential mediator, despite the significant correlations between alexithymia scores and *somatisation* (with the exception of *EOT* and *somatisation* on parametric analysis).

3.6 Path Analysis

Following the selection of the initial and mediator variables, path analysis was undertaken using the methodology suggested by Kenny (2006). All regression analyses are shown in Appendix 15.

Step 1

To demonstrate a significant relationship between the initial variable (*punishment*) and the outcome variable (*somatisation*). Regression analysis revealed a significant association between these variables ($t = 3.041, p = .004$).

Step 2

To demonstrate a significant relationship between the initial variable (*punishment*) and the potential mediator variables (*AD* and *total dissociation*).

Regression analysis revealed a significant association between *punishment* and *AD* ($t = 3.617, p = .001$). A significant association was also found between *punishment* and *total dissociation* ($t = 3.484, p = .001$).

Step 3

To demonstrate that the mediator variable, (*AD* and / or *total dissociation*), are associated with the outcome variable (*somatisation*) while controlling for the initial variable (*punishment*).

Regression analysis revealed no significant association between *AD* and *somatisation*, when *punishment* was held constant ($t = 1.906$, $p = .065$). However, a significant association was found between *total dissociation* and *somatisation*, when controlling for *punishment* ($t = 2.238$, $p = .032$).

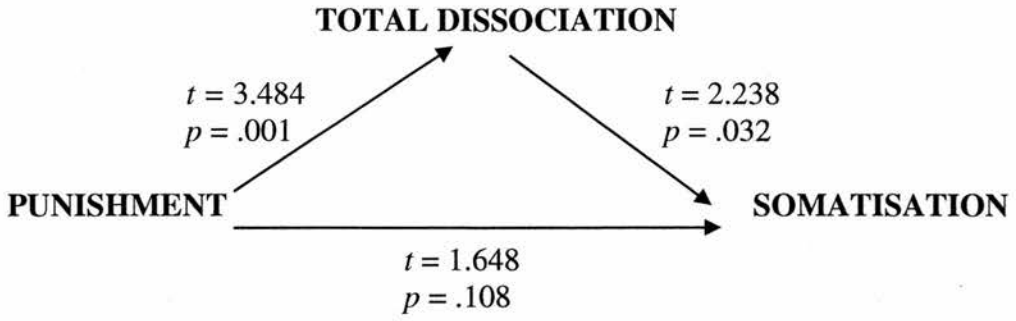
Under the criteria described by Kenny (2006) *AD* was not found to be a mediator, however *total dissociation* did appear to have a mediative effect.

Step 4

To determine the degree of mediation, whether complete or partial. If the association between the initial variable (*punishment*) and the outcome variable (*somatisation*) is non-significant, after controlling for the mediator variable (*total dissociation*) then there is complete mediation. Alternatively, if the relationship is significant then the extent of the mediation is partial.

Regression analysis revealed no significant association between *punishment* and *somatisation* when *total dissociation* was held constant ($t = 1.648$, $p = .108$), indicating the *total dissociation* operates as a complete mediator in the relationship between *punishment* and *somatisation*. The mediative role of *total dissociation* between *punishment* and *somatisation* is shown in Diagram 3.0 below.

Diagram 3.0 The Mediative Role of Total Dissociation



Sobel Test

Kenny (2006) expresses some concern regarding the use of a series of regression models to test for mediation. He notes that even if a mediator has no effect on the outcome variable, a decrease in the correlation between the initial and outcome variable can still occur after controlling for the mediator. He therefore recommends that a single test of mediation be used, namely the Sobel test (Sobel, 1982). The Sobel test equation is as follows:

$$\text{z value} = (a \times b) / \text{Sqrt}(b^2 \times s_a^2 + a^2 \times s_b^2)$$

a	=	unstandardised regression coefficient for the relationship between the initial variable and mediator
s_a	=	standard error of a
b	=	unstandardised regression coefficient for the relationship between the mediator and the outcome variable, controlling for the initial variable
s_b	=	standard error of b

Even though regression analysis revealed no mediative effect for *AD* (z = 1.684, p = .092) on the association between *punishment* and *somatisation*, the Sobel test was performed and confirmed this finding.

The Sobel test also demonstrated that *total dissociation* (z = 1.881, p = .060) was not a mediator in the relationship between *punishment* and *somatisation*. Sobel test results are shown in Appendix 16.

3.7 Potential Outlying Data

From a visual check of the data, subject five appeared to be a potential outlier, having a relatively high score for *punishment* (15), relatively low scores for *AD* (2.5) and *total dissociation* (3.9) but showing no evidence of somatisation. As a consequence of the small sample size it was felt necessary to check that this individual was not having a disproportionate impact on the path analysis findings. Therefore this individual was removed from the data set and the regression analyses and Sobel test were repeated.

Step 1

A significant relationship was found between *punishment* and *somatisation* (t = 3.901, p = .000).

Step 2

Regression analysis revealed a significant association between *punishment* and *AD* (t = 3.830, p = .001). A significant association was also found between *punishment* and *total dissociation* (t = 3.982, p = .000).

Step 3

No significant association was found between *AD* and *somatisation*, when *punishment* was held constant (t = 1.464, p = .152). The relationship between

total dissociation and *somatisation*, when controlling for *punishment* (t = 1.473, p = .150) was also non-significant.

Neither *AD* or *total dissociation* were found to act as mediators when subject 5 was removed, thereby rendering step 4 irrelevant.

Sobel Test

The Sobel test revealed no mediative effect for *AD* (z = 1.374, p = .169), or *total dissociation* (z = 1.382, p = .167) on the relationships between *punishment* and *somatisation.*

3.8 Supplementary Associations of Clinical Interest

A number of significant relationships were apparent from the correlation analyses (Appendices 13 & 14) that were not the subject of the study's hypotheses. These associations are however, of broader clinical interest and are therefore noted.

Highly significant correlations were found between all forms of abuse on parametric and nonparametric analyses, the exception being the strength of the relationship between *sexual abuse* and *punishment*, which was significant at a 5% level on Spearman Rho.

While the abuse scores, with the exception of *sexual abuse*, were associated with somatisation, none of the parenting variables were correlated with *somatisation*, with the exception of *maternal care* score, on the Spearman analysis. However, the majority of both *maternal* and *paternal care* and *overprotection* scores were significantly associated with all forms of abuse. Specifically *maternal* and

paternal care scores were negatively correlated with all forms of abuse and neglect, the only exception to this being *paternal care* and *sexual abuse*, which failed to achieve significance. Both parents' *overprotection* scores were positively correlated with all abuse subscales and *total abuse*, again the exception to this was the *paternal overprotection* score which failed to achieve consistently significant associations with *sexual abuse* on both parametric and nonparametric analyses.

None of the *alexithymia* scores were related to either abuse or parental style. Highly significant positive correlations were found between all *alexithymia* scores and all dissociation scores, with the exception of the *EOT* subscale of the TAS-20, which achieved significance at 5% level with *AD* but was not significantly related to *AII*, *DD* or *total dissociation*. Significant associations were also found between all subscales and total score of the TAS-20 and *somatisation*, again the exception was *EOT*, which failed to consistently achieve a significant correlation with *somatisation* on both Pearson and Spearman analyses.

Maternal and *paternal overprotection* scores were significantly related to *AD*, *AII* and *total dissociation* scores, the exception being *paternal overprotection* and *AD*; the correlation on Spearman Rho failing to achieve significance. *Parental overprotection* was however unrelated to *DD*

Age was consistently negatively correlated with *emotional abuse*, *neglect*, and *total abuse*. *Age* was also negatively correlated with *somatisation* on Pearson analysis, while narrowly failing to achieve significance on the nonparametric analysis. None of the other demographic variables were associated with

somatisation. The only other significant relationships between demographic variables and the variables investigated for mediative effects were between *gender* and *EOT*, and between *socio-economic status* and *DD*. These results indicate that males scored higher than females for *EOT*, and that lower *socio-economic status* was associated with higher levels of *DD*.

3.9 Summary of Results

To summarise the results of the analyses concerning the study's hypotheses, parametric and nonparametric correlations revealed significant associations between all forms of abuse and *somatisation* with the exception of *sexual abuse*. *Punishment* was found to have the strongest association with *somatisation*, while none of the parental style variables were related to *somatisation*. *Alexithymia* did not emerge as a potential mediator in the relationship between abuse and *somatisation*, but *amnestic dissociation* (*AD*) and *total dissociation* did. Regression analyses in conjunction with the Sobel test of mediation revealed that both *AD* and *total dissociation* failed to meet the criteria of mediators in the relationship between *punishment* and *somatisation*.

Chapter 4

Discussion

4.0 Objectives of the Current Study

The objectives of the current study were to investigate the relationship between CIT and somatisation in adulthood, and also to determine whether alexithymia and dissociation mediate the relationships between negative childhood experiences and somatisation. The findings of the current study will be examined in relation to other relevant research. The implications of the current study's results for clinical practice will also be discussed, as will the limitations of the study. Finally the possible directions for further research will be considered.

It is necessary however, to preface the discussion with a note of caution regarding the interpretation of the results, due to the failure of the study to achieve the necessary level of power. Various steps were taken during the statistical analyses to reflect the small sample size. Natural log and square root transformations were performed on all variables before selecting the most normalised measure for each variable. Six out of 18 variables failed to achieve normality; therefore both parametric and nonparametric analyses were carried out to ensure consistency of results. Variables were selected for inclusion in the path model on the basis of having consistently strong relationships in both types of analyses. Due to insufficient power only one dimension for each category of variable was selected for inclusion in each model, i.e. *punishment* was the only abuse variable, while *AD* and *total dissociation* were examined individually in two separate analyses. Despite the practical precautions taken during the statistical analysis, any conclusions drawn from the results will be somewhat tentative as a consequence

of the small sample size, which constrained the planned analysis that would have enable the effects of multiple variables to be controlled for.

4.1 The Relationship Between Childhood Interpersonal Trauma and Somatisation

The first hypothesis was that experiences of CIT would be associated with somatisation. The results revealed a significant relationship between *somatisation* and *punishment*, *emotional abuse*, *neglect / negative home* environment, and *total abuse* score. No association was found between *sexual abuse* and *somatisation*, while the strongest relationship was between *punishment* and *somatisation*. Although this result is based on a small data set, the finding is supported by research carried out by Briere and Runtz (1988b) and Walling *et al.* (1994), who also describe significant relationships between physical abuse and somatisation.

The lack of an association between *sexual abuse* and *somatisation* is somewhat surprising given the number of studies that have reported significant associations between these variables (Briere and Runtz, 1988a; Morrison, 1989; Newman *et al.*, 2000; Sansone, Gaither and Sansone, 2001). This may have been due to the fact that the SCL-90R does not contain items that enquire about somatic symptoms in the primary or secondary sexual organs. Another possible explanation may be the limited sample size, although the prevalence of sexual abuse within the current sample, for both male and female participants, is comparable to the prevalence rates of CSA reported in other psychiatric populations (Berenbaum, 1996; Jacobson & Richardson, 1987; Shack *et al.*, 2004; Wurr & Partridge, 1996).

Contrary to the finding of Fromuth (1986), Lackner, Gudleski and Blanchard (2004), and Craig *et al.* (1993) no associations were found between *somatisation* and either *maternal* or *paternal care* and *overprotection* scores. This was despite the fact that the majority of the parental scores were significantly correlated with all forms of abuse, 15 out of 20 of these associations being highly significant in both parametric and nonparametric analyses. The only exception to the correlations found was *paternal care* and *sexual abuse*, which failed to achieve significance.

4.2 Mediation Effects

Having selected *punishment* as the initial variable, significant associations were found between *punishment* the *AD* and *AII* subscales of the DES, and the *total dissociation* score. The *AD* subscale was found to have the strongest relationship with *punishment*, while the *DD* subscale was not significantly associated with *punishment*. These results are consistent with the findings of Briere and Runtz (1988b) who found significant correlations between dissociation and childhood physical and psychological abuse. In a general population study, Mulder *et al.* (1998) also found that experiences of childhood physical abuse were strongly associated with high levels of dissociation, conversely sexual abuse was not significantly related to dissociation after controlling for the effects of current psychiatric illness and physical abuse.

The *alexithymic subscales* of the TAS-20 and the *total alexithymia* score were not found to be significantly associated with *punishment*, in both Pearson and Spearman correlation analyses. Kooiman *et al.* (2004) also reported the lack of association between abuse and alexithymia, however they did find significant

interactions between sexual abuse, maternal care and alexithymia. Patients with a history of CSA who had received optimal maternal care scored the lowest for alexithymia. Such analysis was not within the scope of the current study.

Consistently having the strongest association with *punishment* across both parametric and nonparametric analyses, *AD* was selected as a potential mediator variable in the relationship between *punishment* and *somatisation* in one path model. *Total dissociation* was also selected as a potential mediator, which would be examined in a separate analysis; *total dissociation* had a strong relationship with *punishment* and the strongest association with *somatisation.* The consideration of *total dissociation*, in addition to *AD*, was further motivated by the lack of established reliability for the subscales of the DES. However, as Brown, Schrag and Trimble (2005) discovered when comparing a group of somatising patients with a group of medically ill patients, only dissociative amnesia as measured by the SCID-D was significantly more common in the somatisation group than the medical group. No other significant differences were found for the other subscales of the SCID-D. The authors suggest that only certain features of dissociation may be of relevance for understanding medically unexplained symptoms and advise against the use of total scores on the Dissociative Experiences Scale. Obviously from the perspective of clinical application an individual would be more likely to receive treatment for pathological dissociation rather than a specific component of dissociative experience. The implications for current clinical practice may be somewhat inconsequential, however from a theoretical perspective, examination of the component dimensions of dissociation may lead to the refinement of our understanding of the factors involved in somatisation.

Regression analysis revealed that *AD* did not fulfil the criteria of a mediator in the relationship between *punishment* and *somatisation*, but *total dissociation* did appear to operate as a complete mediator in this association. However, a visual check of the data revealed a potential outlying subject, with a relatively high score for *punishment*, a relatively low scores for *AD* and *total dissociation,* and a score of zero for *somatisation*. The removal of this subject further confirmed that *AD* did not have a mediative effect. Subject five's removal also reduced the strength of the relationship between *total dissociation* and *somatisation* when controlling for *punishment*, which now rendered this association non-significant. This individual subject had clearly had a disproportionate effect on the path analysis findings, as a consequence of the small sample size. *Total dissociation* no longer made a significant contribution to the prediction of *somatisation* over and above the contribution made by *punishment*, and was not found to be a mediator in this relationship.

The analysis undertaken in the current study would appear to imply that neither *AD* nor *total dissociation* are mediators in the relationship between *punishment* and *somatisation*. While the lack of power in the current study is an obvious a concern, there is some empirical support for this finding from the Pribor *et al.* (1993) study. They also reported a significant relationship between dissociation and somatisation; an association that was rendered non-significant when abuse was controlled for.

4.3 Other Relevant Findings

A number of associations emerged from the correlation analyses that were not the subject of the study hypotheses, but are of clinical relevance.

The significant correlations consistently found between all forms of abuse lend further support to the argument that future investigations should be cautious if investigating a single type of trauma, due to the potential for other forms of abuse to confound the results.

As already discussed, the findings of the current study were not consistent with the reported associations described by other investigators (Fromuth, 1986; Lackner, Gudleski and Blanchard, 2004; Craig *et al.*, 1993) with regard to significant relationships between parental style and somatisation. This may have been the result of different measures of parental style being employed in the various studies, but may also have been the result of the sample size in the current investigation. A few parental scores were approaching significance on the nonparametric analysis, while *maternal care* score did achieve a significant association with *somatisation* on Spearman Rho, although not consistently found on Pearson correlation.

Maternal and *paternal care* scores were negatively correlated with all forms of abuse and neglect, the exception being *paternal care* and *sexual abuse*, which failed to achieve significance. Predictably, these associations indicate that low parental care is related to children's experiences of abuse and neglect. *Parental overprotection* scores were positively correlated with all abuse subscales and *total abuse*, the exception on this occasion being *paternal overprotection* scores, which failed to achieve consistently significant associations with *sexual abuse* across

both analyses. These results point to the intrusive and controlling tendencies of parents who abuse their children.

None of the *alexithymia* scores were related to either abuse or parental style. These results do not support the hypothesised relationships between CIT and alexithymia (Krystal, 1982). Although a number of authors have reported associations between various forms of abuse and alexithymia (Berenbaum (1996; Frewen *et al.*, 2006; Zlotnick, Mattia & Zimmerman, 2001; Zlotnick, Zakriski *et al.*, 1996), Kooiman *et al.* (2004) also failed to find an association between physical or sexual abuse and alexithymia, but they did report an interaction between sexual abuse, maternal care and alexithymia, in which optimal maternal care was found to be associated with lower levels of alexithymia. However, Kooiman *et al.* (1998) had previously reported that parental style was not very predicative of alexithymia, finding that only the DIF subscale was moderately associated with maternal care and paternal overprotection.

Maternal and *paternal overprotection* scores were positively correlated with *AD*, *AII* and *total dissociation* scores, the exception being *paternal overprotection* and *AD*; the correlation on nonparametric analysis failing to achieve significance by the narrowest of margins. *Parental overprotection* was however unrelated to *DD* indicating that intrusive parenting is associated with higher levels of particular dissociative dimensions.

Highly significant positive correlations were found between all *alexithymia* scores and all dissociation scores. The *EOT* subscale of the TAS-20 was the exception; this subscale was not significantly related to *AII*, *DD* or *total dissociation* and

only achieved a significant association with *AD* at a 5% level. These findings are supported by several studies that have also reported associations between the DIF subscale and dissociation in clinical and non-clinical populations (Elzinga, Bermond & van Dyck, 2002; Mason *et* al., 2005; Wise, Mann & Sheridan, 2000). While Irwin and Melbin-Helberg (1997) and Grabe *et al.* (2000) describe significant relationships between dissociation and both the DIF and DDF subscales in non-clinical and clinical participants. The findings of previous research and the current study appear to demonstrate that only certain dimensions of alexithymia are of relevance to dissociative experiences.

Higher levels of s*omatisation* were related to higher scores on all subscales of the TAS-20 and *alexithymia total* score. The exception was *EOT*, which failed to consistently achieve a significant correlation with *somatisation* on parametric and nonparametric analyses, while the strongest relationship was between the *DIF* subscale and *somatisation*. These results are supportive of the findings of other research, in which the DIF subscale, in particular, has been reported to have the strongest association with somatic symptom reporting (Bach & Bach, 1996; Waller & Scheidt, 2004; De Gucht & Heiser, 2003). An explanation for the associations between alexithymia and somatisation in the current study are beyond the scope of this investigation. However, the relationship between alexithymia and somatic symptoms reporting does not appear to be the result of CIT. The present findings do not rule out the possibility however, that alexithymia is a personality trait, or a secondary state reaction to mental ill health as suggested by Bach *et al.* (1994), although their sample population of psychiatric inpatients clearly suffered from more severe psychopathology than the participants in the current study.

Age was consistently negatively correlated with *emotional abuse*, *neglect*, and *total abuse*, indicating that younger participants recalled more emotional abuse, and neglect, in particular than older participants. This result is most likely to be a spurious finding, which would be unsurprising given the sample size. Although speculative, it may also be possible that younger participants' memories for emotional abuse and neglect are more acute given the temporal proximity to their childhood, while older participants recall of such experiences may have diminished with the passage of time.

Younger participants in the current study reported more somatic complaints than older individuals although this finding was not consistently found on both parametric and nonparametric analyses. Lipowski (1986) indicates that somatisation can occur at any age, but is more commonly found in individuals aged 20 to 60 years. Male participants scored higher than females on the *EOT* subscale of the TAS-20. Lane *et al.* (1998) also found that males scored higher on the *EOT* subscale at a significance level of less than 0.1%, however males in the Lane *et al.* (1998) also scored higher on the *DDF* subscale at a significance level of less than 1%. Finally the significant association between lower *socio-economic status* and higher levels of *DD* is thought to be another spurious finding attributable to the small sample size.

4.4 Clinical Implications

The clinical implications of the current study and the testing of the research hypotheses are limited in that neither *AD* nor *total dissociation* were not found to be mediators in the relationship between *punishment* and *somatisation*. Had *AD* or *total dissociation* operated as mediators in this association then there would

have been substantial grounds for selecting dissociation as a target for treatment in individuals referred for somatisation. Nevertheless most of the abuse variables, *dissociation* scores and *somatisation* were found to be significantly associated; therefore it is still valid to argue that dissociative experiences should be assessed in clients presenting with somatisation. The prevalence rate of dissociation in participants was higher than had been previously reported in similar populations. This finding appears to lend further credence to the conclusions drawn by Saxe *et al.* (1994) that dissociation and somatisation often go unrecognised in mentally ill patients.

The level of alexithymia found in the current study is also slightly higher than has previously been described by other researchers investigating similar populations. The clinical implications of this finding are significant, as the participants are individuals attending clinical psychology services, where the main approach to treatment is Cognitive Behavioural Therapy (CBT). Young, Klosko and Weishaar (2003) note that one assumption of CBT is that 'with brief training, patients can access their cognitions and emotions and report them to the therapist' (p.3). As already discussed, the fundamental problem for alexithymic individuals is that they are unable to identify and describe their feelings, which clearly has the potential to render CBT ineffectual. Psychoanalytic techniques are also redundant in the treatment of these patients as Freyberger (1977) so eloquently described. However, supportive psychotherapeutic techniques have been reported to be helpful in the case of alexithymic patients with psychosomatic presentation. Such methods provide individuals with the opportunity to develop some emotional awareness and skills to increase emotional regulation, in addition to labelling emotions and increasing tolerance of affective states, while some psycho-

education is also recommended (Krystal, 1982; Taylor *et al.*, 1991). There would appear to be no reason why these techniques could not readily be applied to alexithymic individuals irrespective of whether they were somatising or not.

4.5 Limitations

There were a number of limitations in the current study, including the sample size, recruitment to the study, distribution of the data, the cross-sectional design, reliance on retrospective measures and on participants' own attributions of their somatic complaints, all of which will now be discussed in more detail.

Sample Size

The major disappointment and concern for the current study was the failure to achieve the required level of power to comprehensively test the research hypotheses. Firstly, the predominant role of *punishment* on *somatisation* cannot be assumed, as other forms of abuse could not appropriately be controlled for given the limited sample size. The initial correlation analyses revealed that types of abuse were highly correlated, suggesting that multiple forms of abuse tend to co-occur within families, a finding that is has also been reported by Briere and Runtz (1988b, 1990). The small sample size also meant that outlying values could quite easily have a disproportionate effect on the results, as was observed with subject five.

Recruitment to the Study

There were considerable problems with recruitment to the current study, especially from Site B, which only managed to recruit 2.2% of the individuals referred to this department. There are a number of reasons why this may have

occurred. The principal researcher did not work at this site and therefore had to rely on other members of staff based at Site B to remind all clinicians to introduce the research to their new clients. The manager of Site B was asked by the principal researcher if another visit and presentation to the department would be possible to encourage recruitment, however the manager indicated his preference to address the staff at Site B himself regarding the research. Regular reminders were emailed to Site B and posters were also sent to be displayed in all consulting rooms.

Site A managed to recruit 13.7% of the individuals referred to this department, however this figure was lower than had been anticipated. Site A had employed five new members of staff, three of whom had recently qualified as therapists. These individuals were therefore undertaking a large number of new referrals to develop their caseloads. The number of completed packs that were returned by these clinicians was very low, until the final month of the study. The general impression given to the principal researcher was that the new clinicians initially lacked the confidence to introduce the research to their clients.

The third Clinical Psychology department did not recruit any participants to the current study due to ongoing departmental research within the site.

Clearly the current study encountered significant problems with recruitment of participants. The extended period taken for the study to receive full ethical approval undoubtedly impacted substantially on recruitment. Other difficulties may be related to the stringent criteria imposed by the local area ethics committee. The committee insisted that the consent pack be issued separately from the

questionnaire pack, and that the research be conducted with the complete awareness of the participants' own psychologist, which meant that the packs had to be returned directly to the participants' own clinician, rather than in the post. This may have effected the willingness of clinicians to introduce the research, for concern that their clients would feel more obliged to complete the research whether they wanted to or not. While anecdotal, a frequent comment made by psychologists was that their clients had completed the questionnaires but had forgotten to bring them back to their subsequent appointments. If participants had been given the option of returning their packs by post the effect of forgetfulness on the number of packs returned may not have been so pronounced. Clinicians also indicated that a number of their clients had wanted to participate, but on realising the procedural requirements were less enthusiastic.

Ethical considerations, as they should be, were paramount in this research, particularly due to the sensitive nature of abusive childhood experiences. Great emphasis was placed on ensuring that consent was fully informed, by making individuals aware of the potential for distress, especially for those who have an abuse history, via the Participant Information Sheet (Appendix 3) and then again in the covering letter that accompanied the questionnaire pack (Appendix 5). It is reasonable to assume that some individuals may have elected not to participate for fear of becoming upset having suffered maltreatment in childhood, which may have caused some bias in the sample population.

Sample Population

The sample population were individuals referred to Primary Care Clinical Psychology departments for the treatment of a range of psychopathologies. The Eligibility Criteria, presented in Table 2.0, for referrals made to this service excludes a number of presenting problems that are of potential significance in relation to the variables under consideration by the current study. As previously noted, personality disorder (Herman, Perry, & van der Kolk, 1989; Ogata *et al.*, 1990), addiction problems (Bennett & Kemper, 1994; Kendler *et al.*, 2000), and anorexia nervosa (Hall *et al.*, 1989; Rayworth, Wise & Harlow, 2004) have all been associated with CIT, however individuals with such difficulties do not meet the eligibility criteria for the primary care psychology service from which the study participants were recruited. Individuals with psychosexual problems are also excluded by the eligibility criteria, with research demonstrating a link between such difficulties and sexual abuse, in particular (Baisden & Baisden, 1979). Other research examining alexithymia (Kauhanen, Julkunen & Salonen, 1992; Schmidt, Jiwany & Treasure, 1993) dissociation (Carlson & Putnam, 1993; Goldner, Cockhill, Bakan *et al.*, 1991; Herman, Perry & van der Kolk, 1989) and somatisation (Ross, Heber, Norton *et al.*, 1989; White & Litovitz, 1998) have found significant associations between these variables and many of the disorders listed as exclusion criteria in the primary care eligibility criteria. The local area eligibility criteria will therefore have introduced an element of bias in the sample population through the exclusion of individuals with presenting difficulties that are of relevance to the current investigation.

Information regarding diagnosis was not collected by the current study, however the author's own experience of the type of referral made to the local area Clinical

Psychology Service would suggest that the vast majority of these letters are unlikely to have specified somatisation as the primary reason for referral. Previous research has also shown that somatising patients are more likely to present to medical health services, as physicians try to uncover an organic cause for symptoms that defy medical explanation (Bass, 1990; Stuart & Noyes, 1999). Therefore the individuals in the current study who show evidence of somatisation are very likely to represent a small proportion of the somatising population, specifically those individuals who have comorbid affective and anxiety disorders. Wise and Mann (1995) found that psychiatric patients scoring high on the TAS were more likely to attribute their somatic symptoms to a psychological cause. Given the current study's approach to assessing somatisation it may be anticipated that the levels of somatisation in the current sample would be lower than that found in other populations. This is not considered to be a serious concern as the aim of the study was not to estimate the prevalence of somatisation, but was to examine the hypothesised associations between somatisation and the other variables of interest.

A sample population with obvious advantages, for testing the current study's hypotheses, over the clinical psychology participants recruited, would be individuals referred to a specialist clinic for medically unexplained symptoms. In such a setting thorough physical investigations could be undertaken to exclude potential organic causes for an individual's symptoms, as opposed to having to rely on participants' own attributions for their symptoms. To the best of the author's knowledge however, no such clinic exists within the local region where that study was conducted, while recruiting from clinical psychology was assumed to offer the best chance of being able to recruit a sufficient number of participants.

Distribution of Data

Seven out of 19 variables did not meet the assumptions of a normal distribution, despite transformations of natural log and square root. One of the variables that did not achieve normality was *AD,* however both parametric and nonparametric analyses were undertaken, and conclusions were made on the basis of consistent findings across both statistical techniques.

Cross-sectional Design

The cross-sectional design of the current investigation relied on retrospective reports of childhood experiences and current levels of alexithymia, dissociation and somatisation, but such an approach does not enable the inference of causality. It may be tempting to assume that current psychopathology is a product of traumatic or unpleasant events during childhood, however it is also possible that current distress may influence recollection of negative experiences, or that the observed psychopathology predates the abuse suffered in childhood. The cross-sectional design of the study does not necessarily invalidate the study's findings, as the main aim was to investigate the associations between childhood experiences, alexithymia, dissociation and somatisation. A longitudinal design would avoid many of the problems associated with the cross-sectional design but was clearly not possible given the time constraints.

Reliance on Retrospective Reports

The study relied on retrospective reports of childhood experiences of abuse and parenting, without objective corroboration. As already noted there are a number of reasons why individuals may under-report or over-report negative experiences from childhood. It was hoped that the options available for completing the

questionnaires and the assurances given regarding confidentiality of responses would increase the veracity of participants' accounts. It was also anticipated the selection of the CAT scale in particular, with the relatively mild format of items, would lead to more candid reporting, a specific aim of the authors of the CAT scale (Becker-Lausen, Sanders & Chinsky, 1995).

An issue of particular concern for the current study was the relatively high prevalence rate of significant levels of dissociative experiences, as Chu *et al.* (1999) commented on dissociation disrupting memory, while Tillman, Nash & Lerner (1994) challenged the veracity of retrospective accounts from individuals who dissociate warning of the possible effects of dissociation leading individuals to confuse fantasy with actual experiences.

Reliance on Participants Own Attributions

The modification made to the somatisation subscale of the SCL-90R in the current study meant that the assessment of somatisation relied on participants' own attributions of their physical symptoms. This was done in an attempt to exclude cases where there appeared to be a clear organic cause for a bodily symptom, which may otherwise have lead to the overestimation of somatisation. However, if De Gucht and Heiser (2003) are correct, individuals are more likely to attribute physical symptoms to an organic cause, which may have resulted in somatisation being underestimated in the current sample population. Questions can be raised as to whether participants are really best placed to judge the origin of their own somatic symptoms subjectively. However, in the absence of a thorough medical examination carried out by a suitably qualified physician, the additional self-diagnostic question was thought, on balance, to increase the likelihood of a more

accurate assessment of somatisation being obtained for the sample population by allowing participants to indicate whether their symptoms could reasonably be explained by an organic cause, such as the flu.

4.6 Future Research

An obvious direction for future research would simply be to repeat the study recruiting sufficient participants to ensure that the requirements for power were adequately met. Measuring the same variables at two time points, before and after treatment, would also enable the effects of current mood state to be examined.

Recruiting participants from a specialist clinic for medically unexplained symptoms where a physical examination could be undertaken to exclude organic causes of symptoms would be a more satisfactory method for determining instances of somatisation.

Clearly a longitudinal design would also have many advantages over the current cross-sectional study, specifically in terms of the ability to clarify issues of causality, however such procedures are generally very expensive and impractical.

4.7 Conclusions

The current study found that all forms of abuse were significantly associated with *somatisation*, with the exception of sexual abuse. Additionally *parental style* was not found to be associated with *somatisation*. The results indicate that while *punishment* was strongly associated with *somatisation*, neither *amnestic dissociation* nor *total dissociation* were found to act as mediators in the relationship between *punishment* and *somatisation*. The strength of the

associations found between abuse variables, dissociation scores and somatisation is encouraging, especially given the small sample size, however the conclusions of this study are tentative as a result of the failure to meet the power requirements.

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Appendix 1

Ethics Approval Letter

NHS

Miss Debra O'Neill
Trainee Clinical Psychologist

Date: 25th April 2007
Your Ref:
Our Ref: LR/**07/S1402/12**
Enquiries to:
Extension:
Direct Line:
Email:

Dear Miss O'Neill

Full title of study: **The Relationship Between Childhood Interpersonal Trauma and Somatisation in Adulthood: The role of Alexithymia and Dissociation**

REC reference number: **07/S1402/12**

Thank you for your recent communication, which was received on 24th April 2007. You included the following document:

Document	Version	Date
Participation Information Sheet	3	20th April 2007

I am pleased to re-affirm the favourable opinion on behalf of the Committee.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

07/S1402/12	**Please quote this number on all correspondence**

Yours sincerely

Copy to: University of Edinburgh
NHS R&D office

Appendix 2

Consent Pack Covering Letter

Dear Sir / Madam,

I am a Trainee Clinical Psychologist studying at the University of Edinburgh and working in the Clinical Psychology Department. I am conducting a research study as part of my training in and I am looking for participants to take part in this study.

My area of interest is in childhood trauma and how this affects peoples' experiences of physical symptoms in adulthood. I am also interested how these factors impact on peoples' level of awareness, memory and identity, as well as their ability to appreciate and describe their own emotions.

You have received this information pack as someone who has been referred to Primary Care Psychology Services within . I would be grateful if you would take the time to read the enclosed information and think about whether or not you would be willing to participate in this study.

If you agree to take part, please complete the consent form and return it sealed in the envelope to the psychologist you are attending. You will then be given the research questionnaires either to take home to complete in your own time, or if you prefer, a time can be arranged for you to complete the questionnaires while you are in the psychology department.

If you are not interested please discard this letter and the information enclosed.

If you have any further queries please do not hesitate to contact me. The contact details are provided on the Participant Information Sheet.

Thank you for your time.

Yours faithfully,

Debra O'Neill
Trainee Clinical Psychologist

Appendix 3

Participant Information Sheet

The Relationship Between Childhood Interpersonal Trauma & Somatisation in Adulthood: The Role of Alexithymia & Dissociation

You are being invited to take part in a research study as someone who is currently receiving psychological treatment in . We believe this study to be of potential importance. However, before you decide whether or not you wish to participate, we need to be sure that you understand why we are doing this study, and what it would involve if you agreed. We are therefore providing you with the following information. Please take time to read this information carefully and be sure to ask any questions you might have. In addition talk to others about the study if you wish. We will do our best to explain and to provide any further information you may require now, or in the future. You do not have to make any immediate decision. Ask us if there is anything that is not clear, or if you would like more information. Take time to decide whether or not you wish to take part.

What is the background to this study?

This study is being conducted through the Department of Clinical Psychology in and the University of Edinburgh. We would like to investigate the relationship between negative experiences in childhood and physical symptoms in adulthood. In addition we would also be examining how these factors impact on peoples' level of awareness, memory and identity, as well as their ability to appreciate and describe their own emotions. We believe that this research will provide us with a clearer understanding of clients' difficulties and will aid therapists in the treatment of clients. This project is also being conducted as part of the Doctorate in Clinical Psychology at the University of Edinburgh.

What does the study entail?

As part of this study we would like to ask you to fill in some questionnaires relating to your experiences in childhood: specifically relating to physical, emotional and sexual abuse and neglect, and your relationship with your parents. Examples of the questions that you would be asked include: 'Did your relationship with your parents ever involve a sexual experience?' and 'As a child did you feel unwanted or emotionally neglected?' You would be given the choice to either take the questionnaires home with you to complete in your own time, or if you would prefer to fill out the questionnaires while you are in the psychology department, then arrangements would be made to enable you to do this.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep and will be asked to sign the enclosed consent form. You are free to withdraw at anytime, and without giving a reason. A decision to withdraw, at any time, or a decision not to take part will <u>not</u> affect the standard of any future care you may receive. This study is entirely separate from any contact you have with health services.

What will happen to the information collected in the study?

If you are willing to take part in this study, all information about you and the responses that you give on the questionnaires will be confidential, with no names or personal information being used in the write-up of the study. The information you provide will not be shared with any other health professionals.

Will my taking part in the study be kept confidential?
Yes. All information, which is collected, about you during the course of the research will be kept strictly confidential. The information collected about you in this study will be anonymised, i.e. linked to a special code that is stored separately on a password-protected computer file. Your identity will only be known to the Principal Researcher, Debra O'Neill. The other members of the research team (i.e. the supervising Clinical Psychologist, and Academic Supervisor, Dr) will also have access to the anonymised data, but will not have access to the questionnaires or consent forms.

All information obtained in the study will be stored securely in the Clinical Psychology Department and retained for a period of 5 years. Access to the questionnaires will only be granted to the Principal Researcher, Debra O'Neill. **The researcher and Clinical Psychologist may be obliged to breach confidentiality, if you disclosed any type of illegal activity or revealed information that gave us cause for concern regarding your safety, or the safety of others. Such a breach of confidentiality would occur, with your own Clinical Psychologist, in the event that such information came to light during the course of your routine care.**

What are the possible discomforts or risks?
Some questions in the questionnaires may identify areas of difficulty or feelings that you had not fully considered before. In particular, people who have experienced maltreatment or abuse in childhood may tend to underestimate the degree to which such questions might distress them, and this is something that you should consider carefully before deciding whether or not you would like to participate.

While the psychologist you are attending will be aware of your participation in the research, he/she will not be aware of the responses you provide in the questionnaires, unless you indicate that you would like this information to be made available to your psychologist. You are however free to discuss any issues raised by the questionnaires during your routine contact with your psychologist, if you choose to do so. Alternatively if you prefer to discuss any issues raised by the questionnaires with the researcher then please feel welcome to contact either myself, Debra O'Neill, Principal Researcher and Trainee Clinical Psychologist, or , Clinical Psychologist, or Dr , Clinical Psychologist, who may provide advice and support (see contact information below).

Outside support: The Samaritans provide a 24-hour support line if you are in crisis, despairing or suicidal. Tel 0845 790 9090. Web www.samaritans.org.uk

What are your rights?
Participation in this study is entirely voluntary and you are free to refuse to take part, or to withdraw from the study at anytime, without having to provide a reason. Your decision whether or not to take part in the study will have no influence on any current or future psychological or medical care you receive. It will also have no influence on your relationship with any health care staff you are involved with.

The Committee on Medical Research Ethics, which has responsibility for scrutinising all proposals for all medical research on humans in , has examined the proposal and has approved the project. The committee will also receive regular reports from NHS monitors, who will examine the records of the research while it is in progress.

If you are willing to take part in this study, please complete the enclosed consent form and seal it in the envelope provided. You should then return the completed consent form to your psychologist, at a future appointment. You will then be given the questionnaire pack to complete either at home or in the department if you prefer. Once you have completed the questionnaires you can return them to your psychologist in a sealed envelope, which will be provided.

If you wish a copy of the overall results from this study you can get this on request by contacting the Principal Researcher, Debra O'Neill, on the number provided below. This study will be completed by August 2007.

Complaints

If you have a concern about any aspect of this study, you should ask to speak with the researchers who will do their best to answer your questions (see contacts below). If you remain unhappy and wish to complain formally you can do this through the NHS complaints procedure. Details can be obtained from Hospital, telephone ; or by contacting the NHS Helpline on 0800 224488.

If you have any difficulties or further questions, please contact the Principal Researcher, Debra O'Neill, on the number below or leave a message for me to get back to you.

Contacts

Debra O'Neill (Principal Researcher), and (Clinical Supervisor & Clinical Psychologist)

Telephone:

Dr
University of Edinburgh
School of Health in Social Science
Medical School
Teviot Place
EH8 9AG
Telephone:

Thank you for taking time to read and consider the above information. If you are willing to take part in the study, please take time to carefully read and complete the consent form to indicate your consent to participate.

Appendix 4

Consent Form

The Relationship Between Childhood Interpersonal Trauma & Somatisation in Adulthood: The Role of Alexithymia & Dissociation

Consent Form

Please tick

Have you read and understood the participant information sheet? Yes ☐ No ☐

Have you been given an opportunity to ask questions and further discuss this study? Yes ☐ No ☐

Have you received satisfactory answers to all of your questions? Yes ☐ No ☐

Have you received enough information about this study? Yes ☐ No ☐

Who have you spoken to? Dr/Mr/Mrs/Miss.....

Do you understand that your participation is entirely voluntary? Yes ☐ No ☐

Do you understand that you are free to withdraw from this study:

- At any time?
- Without having to give a reason for withdrawing?
- Without this affecting your present or future medical care? Yes ☐ No ☐

Do you agree to any information used in this study being retained for use in future research?

Yes ☐ No ☐

Note that it is a statutory requirement that if you agree to take part in this study your research records and, if necessary, your medical records are available for scrutiny by monitors of the sponsor organisation (which may be the NHS or The University of Edinburgh) and in the case of clinical trials of medicines, the UK regulatory authorities.

Do you agree to take part in this study? Yes ☐ No ☐

Participant's Signature:..... Date:.....

Participant's Name (in block capital letters):.....

Telephone contact:.....

Signature witnessed by:..... Date:.....

Witness Name (in block capital letters):.....

Thank you for agreeing to take part in this research.

Appendix 5

Questionnaire Pack Covering Letter

Dear Sir / Madam,

Thank you for agreeing to participate in this research.

In this pack you will find 6 questionnaires. I would be grateful if you could complete the enclosed questionnaires without skipping any of the items.

The information from these questionnaires will not be given to the Clinical Psychologist responsible for your treatment. If you would like your psychologist to be given this information then please tick the relevant box on the enclosed *Demographic Details* questionnaire.

Before you begin to complete the questionnaires I would like to draw your attention once again to the questionnaire that asks about negative childhood experiences. Completing this questionnaire may be upsetting for some people. Individuals who have experienced maltreatment or abuse as a child may tend to underestimate the degree to which such questions might distress them, and this is something that you should consider carefully before beginning. In the event that you do feel distressed as a result of this research, you can either contact your Clinical Psychologist or one of the members of the research team who will provide support and advice (see contact information below).

Please remember that participation in this study is entirely voluntary and you are free to withdraw from the study at anytime, without having to provide a reason. Your decision to withdraw from the study will have no influence on any current or future psychological or medical care you receive. It will also have no influence on your relationship with any health care staff you are involved with.

If you have any further questions regarding this research please do not hesitate to contact either myself, Debra O'Neill, Principal Researcher and Trainee Clinical Psychologist, or , Clinical Psychologist, or Dr , Clinical Psychologist.

Thank you once again for your time.

Yours faithfully,

Debra O'Neill
(Trainee Clinical Psychologist)

Contacts

Debra O'Neill (Principal Researcher), and (Clinical Supervisor & Clinical Psychologist)

Telephone:

Dr
University of Edinburgh
School of Health in Social Science
Medical School, Teviot Place
EH8 9AG
Telephone:

Appendix 6

Child Abuse and Trauma Scale

Child Abuse & Trauma Scale

This questionnaire asks about the general atmosphere of your home when you were a child or teenager, and how you felt you were treated by your parents or principal caretaker. If you were not raised by one or both of your biological parents, please respond to the questions in terms of the person or persons who had primary responsibility for your upbringing as a child. Where a question asks about the behaviour of both your parents and your parents differed in their behaviour, please respond in terms of the parent whose behaviour was the more severe or worse.

EXAMPLE Question	Never	Rarely	Sometimes	Very Often	Always
As a child did you ever witness violence at home?			✓		

Please tick a box, next to each question, that best describes your experience:

Question	Never	Rarely	Sometimes	Very Often	Always
1. Did your parents ridicule you?					
2. Did you ever seek outside help or guidance because of problems in your home?					
3. Did your parents verbally abuse each other?					
4. Were you expected to follow a strict code of behaviour in your home?					
5. When you were punished as a child or teenager, did you understand the reason you were punished?					
6. When you didn't follow the rules of the house, how often were you severely punished?					
7. As a child did you feel unwanted or emotionally neglected?					
8. Did your parents insult you or call you names?					
9. Before you were 14, did you engage in any sexual activity with an adult?					
10. Were your parents unhappy with each other?					
11. Were your parents unwilling to attend any of your school-related activities?					

Question	Never	Rarely	Sometimes	Very Often	Always
12. As a child were you punished in unusual ways (e.g. being locked in a cupboard for a long time, or being tied up)?					
13. Were there traumatic or upsetting sexual experiences when you were a child or teenager that you couldn't speak to adults about?					
14. Did you ever think you wanted to leave your family and live with another family?					
15. Did you ever witness the sexual mistreatment of another family member?					
16. Did you ever think seriously about running away from home?					
17. Did you witness the physical mistreatment of another family member?					
18. When you were punished as a child or teenager, did you feel the punishment was deserved?					
19. As a child or teenager, did you feel disliked by either of your parents?					
20. How often did your parents get really angry with you?					
21. As a child did you feel that your home was charged with the possibility of unpredictable physical violence?					
22. Did you feel comfortable bringing friends home to visit?					
23. Did you feel safe living at home?					
24. When you were punished as a child or teenager, did you feel "the punishment fit the crime"?					
25. Did your parents ever verbally lash out at you when you did not expect it?					

Question	Never	Rarely	Sometimes	Very Often	Always
26. Did you have traumatic sexual experiences as a child or teenager?					
27. Were you lonely as a child?					
28. Did your parents shout at you?					
29. When either of your parents was intoxicated, were you ever afraid of being sexually mistreated?					
30. Did you ever wish for a friend to share your life?					
31. How often were you left at home alone as a child?					
32. Did your parents blame you for things you didn't do?					
33. To what extent did either of your parents drink heavily or abuse drugs?					
34. Did your parents ever hit or beat you when you did not expect it?					
35. Did your relationship with your parents ever involve a sexual experience?					
36. As a child, did you have to take care of yourself before you were old enough?					
37. Were you physically mistreated as a child or teenager?					
38. Was your childhood stressful?					

Thank you for taking the time to complete this questionnaire.

Office Use Only	

Appendix 7

Parental Bonding Instrument

Parental Bonding Instrument

This questionnaire lists various attitudes and behaviours of parents. The questions on this page ask about your MOTHER, while the questions on the next page ask about your FATHER.

Example question for MOTHER or FATHER	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Ignored me			✓	

Please answer all the items. As you remember your MOTHER in your first 16 years of your life, would you please place a tick in the most appropriate box next to each question:

MOTHER	Very Like	Moderately Like	Moderately Unlike	Very Unlike
1. Spoke to me in a warm and friendly voice				
2. Did not help me as much as I needed				
3. Let me do those things that I liked doing				
4. Seemed emotionally cold to me				
5. Appeared to understand my problems and worries				
6. Was affectionate to me				
7. Liked me to make my own decisions				
8. Did not want me to grow up				
9. Tried to control everything I did				
10. Invaded my privacy				
11. Enjoyed talking things over with me				
12. Frequently smiled at me				
13. Tended to baby me				
14. Did not seem to understand what I needed or wanted				
15. Let me decide things for myself				
16. Made me feel I wasn't wanted				
17. Could make me feel better when I was upset				
18. Did not talk to me very much				
19. Tried to make me feel dependant on her				
20. Felt I could not look after myself unless she was around				
21. Gave me as much freedom as I wanted				
22. Let me go out as often as I wanted				
23. Was overprotective of me				
24. Did not praise me				
25. Let me dress in any way I pleased				

Please answer all the items. As you remember your FATHER in your first 16 years of your life, would you please place a tick in the most appropriate box next to each question:

FATHER	Very Like	Moderately Like	Moderately Unlike	Very Unlike
1. Spoke to me in a warm and friendly voice				
2. Did not help me as much as I needed				
3. Let me do those things that I liked doing				
4. Seemed emotionally cold to me				
5. Appeared to understand my problems and worries				
6. Was affectionate to me				
7. Liked me to make my own decisions				
8. Did not want me to grow up				
9. Tried to control everything I did				
10. Invaded my privacy				
11. Enjoyed talking things over with me				
12. Frequently smiled at me				
13. Tended to baby me				
14. Did not seem to understand what I needed or wanted				
15. Let me decide things for myself				
16. Made me feel I wasn't wanted				
17. Could make me feel better when I was upset				
18. Did not talk to me very much				
19. Tried to make me feel dependant on him				
20. Felt I could not look after myself unless he was around				
21. Gave me as much freedom as I wanted				
22. Let me go out as often as I wanted				
23. Was overprotective of me				
24. Did not praise me				
25. Let me dress in any way I pleased				

Thank you for taking the time to complete this questionnaire.

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Appendix 8

Toronto Alexithymia Scale-20

TAS – 20

Please read the statements below and indicate how much you agree or disagree with each one by ticking the box that best describes your experience. Please tick only one answer for each statement.

EXAMPLE Statement	Strongly Disagree	Moderately Disagree	Neither Disagree nor Agree	Moderately Agree	Strongly Agree
I find my emotions difficult to understand				✓	

Statement	Strongly Disagree	Moderately Disagree	Neither Disagree nor Agree	Moderately Agree	Strongly Agree
1. I am often confused about what emotion I am feeling					
2. It is difficult for me to find the right words for my feelings					
3. I have physical sensations that even doctors don't understand					
4. I am able to describe my feelings easily					
5. I prefer to analyse problems rather than just describe them					
6. When I am upset, I don't know if I am sad, frightened, or angry					
7. I am often puzzled by sensations in my body					
8. I prefer to just let things happen rather than to understand why they turned out that way					
9. I have feelings that I can't quite identify					
10. Being in touch with emotions is essential					

Statement	Strongly Disagree	Moderately Disagree	Neither Disagree nor Agree	Moderately Agree	Strongly Agree
11. I find it hard to describe how I feel about people					
12. People tell me to describe my feelings more					
13. I don't know what's going on inside me					
14. I often don't know why I am angry					
15. I prefer talking to people about their daily activities rather than their feelings					
16. I prefer to watch "light" entertainment shows rather than psychological dramas					
17. It is difficult for me to reveal my innermost feelings, even to close friends					
18. I can feel close to someone, even in moments of silence					
19. I find examination of my feelings useful in solving personal problems					
20. Looking for hidden meanings in movies or plays distracts from their enjoyment					

Thank you for completing this questionnaire.

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Appendix 9

Dissociative Experiences Scale-II

D.E.S

This questionnaire consists of twenty-eight questions about experiences that you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you **are not** under the influence of alcohol or drugs.

To answer the questions, please determine to what degree the experience described in the question applies to you and circle the number to show what percentage of the time you have the experience.

EXAMPLE:

0% 10 20 30 40 50 (60) 70 80 90 100%

NEVER **ALWAYS**

1. Some people have the experience of driving or riding in a car or bus or subway and suddenly realising that they don't remember what has happened during all or part of the trip. Circle a number to show what percentage of the time this happens to you.

   0% 10 20 30 40 50 60 70 80 90 100%

2. Some people find that sometimes they are listening to someone talk and they suddenly realise that they did not hear part or all of what was said. Circle a number to show what percentage of the time this happens to you.

   0% 10 20 30 40 50 60 70 80 90 100%

3. Some people have the experience of finding themselves in a place and having no idea how they got there. Circle a number to show what percentage of the time this happens to you.

   0% 10 20 30 40 50 60 70 80 90 100%

4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Circle a number to show what percentage of the time this happens to you.

   0% 10 20 30 40 50 60 70 80 90 100%

5. Some people have the experience of finding new things among their belongings that they do not remember buying. Circle a number to show what percentage of the time this happens to you.

   0% 10 20 30 40 50 60 70 80 90 100%

6. Some people sometimes find that they are approached by people that they do not know who call them by another name or insist that they have met them before. Circle a number to show what percentage of the time this happens to you.

   0% 10 20 30 40 50 60 70 80 90 100%

7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person. Circle a number to show what percentage of the time this happens to you.

   0% 10 20 30 40 50 60 70 80 90 100%

8. Some people are told that they sometimes do not recognise friends or family members. Circle a number to show what percentage of the time this happens to you.

   0% 10 20 30 40 50 60 70 80 90 100%

9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

10. Some people have the experience of being accused of lying when they do not think that they have lied. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

11. Some people have the experience of looking in a mirror and not recognising themselves. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

12. Some people have the experience of feeling that other people, objects and the world around them are not real. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

13. Some people have the experience of feeling that their body does not seem to belong to them. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

15. Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

18. Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

19. Some people find that they sometimes are able to ignore pain. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

20. Some people find that they sometimes sit staring off into space, thinking of nothing and are not aware of the passage of time. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

21. Some people sometimes find that when they are alone they talk out loud to themselves. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

23. Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc). Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

25. Some people find evidence that they have done things that they do not remember doing. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

26. Some people sometimes find writings, drawings or notes among their belongings that they must have done but cannot remember doing. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

27. Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

28. Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

Thank you for your participation.

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Appendix 10

Revised Symptom Checklist-90

SCL-90-R (Subscale 1)

This questionnaire contains a list of problems people sometimes have. Please read each one carefully and tick the box that best describes HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE LAST 7 DAYS INCLUDING TODAY.

If you have suffered any of the problems listed (in the last 7 days) please indicate if you have been given a diagnosis and if you know what the problem is. Please do not skip any items.

EXAMPLE

HOW MUCH WERE YOU DISTRESSED BY:	Not at all	A little bit	Moderately	Quite a bit	Extremely	Has this problem been diagnosed, or do you know why you have this problem?
Bodyaches				✓		☐ NO ☑ YES > what is the problem? the flu

The questionnaire begins on the next page. Thank you for taking the time to complete the questionnaire.

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HOW MUCH WERE YOU DISTRESSED BY:	Not at all	A little bit	Moderately	Quite a bit	Extremely	Has this problem been diagnosed, or do you know why you have this problem?
Headaches						☐ **NO** ☐ **YES** > what is the problem? .....
Faintness or dizziness						☐ **NO** ☐ **YES** > what is the problem? .....
Pains in heart or chest						☐ **NO** ☐ **YES** > what is the problem? .....
Pains in lower back						☐ **NO** ☐ **YES** > what is the problem? .....
Nausea or upset stomach						☐ **NO** ☐ **YES** > what is the problem? .....
Soreness of your muscles						☐ **NO** ☐ **YES** > what is the problem? .....

HOW MUCH WERE YOU DISTRESSED BY:	Not at all	A little bit	Moderately	Quite a bit	Extremely	Has this problem been diagnosed, or do you know why you have this problem?
Trouble getting your breath						☐ NO ☐ YES > what is the problem? .....
Hot or cold spells						☐ NO ☐ YES > what is the problem? .....
Numbness or tingling in parts of your body						☐ NO ☐ YES > what is the problem? .....
A lump in your throat						☐ NO ☐ YES > what is the problem? .....
Feeling weak in parts of your body						☐ NO ☐ YES > what is the problem? .....
Heavy feelings in your arms or legs						☐ NO ☐ YES > what is the problem? .....

Appendix 11

Demographic Details Questionnaire

Demographic Details

Please tick the relevant boxes

Gender: **Male** ☐ **Female** ☐
Age:
Highest level of education: (please tick only one box) **Primary School** ☐ **Secondary School** ☐ **College / Polytechnic** ☐ **University – Undergraduate** ☐ **University – Postgraduate** ☐ **Other** (please give details).....
First part of your postcode: ☐☐☐☐☐ **(i.e. the first 2 letters and ALL numbers)**
The information that you give in these questionnaires will NOT routinely be shared with your own Clinical Psychologist. **If you <u>would</u> like this information to be shared with your Clinical Psychologist, then please put a tick in this box:** ☐

Thank you

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Appendix 12

Shapiro-Wilk Test of Normality

Variable	Untransformed		Natural Log		Square Root	
	W	Sig.	W	Sig.	W	Sig.
Sexual Abuse	.460	.000	**.625**	**.000**	.617	.000
Punishment	.952	.103	.940	.041	**.977**	**.617**
Emotional Abuse	.930	.020	.925	.014	**.938**	**.037**
Neglect / Negative Home Environment	.932	.023	.926	.015	**.972**	**.451**
Total Abuse	.913	.006	**.962**	**.227**	.960	.187
Mum Care	**.911**	**.005**	.724	.000	.856	.000
Mum Overprotection	.913	.006	**.967**	**.318**	.952	.107
Dad Care	**.929**	**.019**	.763	.000	.870	.000
Dad Overprotection	.897	.002	.904	.003	**.964**	**.251**
Difficulty Identifying Feelings	**.955**	**.126**	.881	.001	.927	.016
Difficulty Describing Feelings	**.959**	**.175**	.892	.002	.934	.027
Externally Oriented Thinking	.984	.845	.982	.783	**.988**	**.941**
Total Alexithymia	**.965**	**.277**	.923	.012	.949	.086
Amnestic Dissociation	.814	.000	.930	.020	**.937**	**.034**
Absorption & Imaginative Involvement	.923	.012	.933	.024	**.974**	**.498**
Depersonalisation / Derealisation	.718	.000	**.914**	**.006**	.897	.002
Total Dissociation	.914	.006	.891	.001	**.964**	**.259**
Somatisation	.906	.004	.910	.005	**.954**	**.120**
Age	**.927**	**.016**	.905	.004	.919	.009

Appendix 13

Pearson Correlations

PEARSON	SA	Pun	EA	Neg	Total Abuse
SA	---	.436** p = .006	.513** p = .001	.505** p = .001	.541** p = .000
Pun	.436** p = .006	---	.812** p = .000	.762** p = .000	.851** p = .000
EA	.513** p = .001	.812** p = .000	---	.913** p = .000	.954** p = .000
Neg	.505** p = .001	.762** p = .000	.913** p = .000	---	.974** p = .000
Total Abuse	.541** p = .000	.851** p = .000	.954** p = .000	.974** p = .000	---
Mum Care	-.649** p = .000	-.682** p = .000	-.663** p = .000	-.720** p = .000	-.714** p = .000
Mum Over'	.409* p = .011	.434** p = .006	.444** p = .005	.402* p = .012	.451** p = .004
Dad Care	-.318 p = .052	-.559** p = .000	-.602** p = .000	-.666** p = .000	-.675** p = .000
Dad Over'	.337* p = .039	.510** p = .001	.452** p = .004	.386* p = .017	.475** p = .003
DIF	.024 p = .885	.279 p = .090	.171 p = .305	.125 p = .453	.145 p = .386
DDF	-.090 p = .592	.201 p = .226	.066 p = .696	.090 p = .591	.089 p = .595
EOT	-.058 p = .730	.084 p = .617	.009 p = .956	-.022 p = .894	.004 p = .980
Total Alexithymia	-.039 p = .818	.249 p = .132	.120 p = .474	.095 p = .571	.113 p = .500

Significance level: **. Significant at the .01 level (2-tailed)
*. Significant at the .05 level (2-tailed)

Abbreviations: SA – Sexual Abuse; Pun – Punishment; EA – Emotional Abuse; Neg – Negative Home Environment & Neglect; Over' – Overprotection; DIF – Difficulty Identifying Feelings; DDF – Difficulty Describing Feelings; EOT – Externally Oriented Thinking.

PEARSON	SA	Pun	EA	Neg	Total Abuse
AD	.165 p = .323	.516** p = .001	.246 p = .137	.227 p = .171	.294 p = .073
AII	.381* p = .018	.434** p = .006	.363* p = .025	.324* p = .047	.360* p = .026
DD	.384* p = .017	.291 p = .076	.162 p = .331	.146 p = .383	.178 p = .285
Total Dissociation	.349* p = .031	.502** p = .001	.316 p = .053	.290 p = .077	.344* p = .034
Somatisation	.054 p = .748	.452** p = .004	.352* p = .030	.393* p = .015	.407* p = .011
Age	.011 p = .946	-.241 p = .146	-.407* p = .011	-.385* p = .017	-.375* p = .020

Abbreviations: AD – Amnestic Dissociation; AII – Absorption & Imaginative Involvement; DD – Depersonalisation / Derealisation

PEARSON	Mum Care	Mum Over'	Dad Care	Dad Over'
Mum Care	---	-.448** p = .005	.552** p = .000	-.328* p = .045
Mum Over'	-.448** p = .005	---	-.124 p = .458	.490** p = .002
Dad Care	.552** p = .000	-.124 p = .458	---	-.305 p = .063
Dad Over'	-.328* p = .045	.490** p = .002	-.305 p = .063	---
DIF	-.105 p = .529	-.031 p = .855	-.208 p = .209	.020 p = .904
DDF	-.074 p = .657	-.019 p = .910	-.236 p = .155	-.087 p = .603
EOT	-.077 p = .646	.126 p = .451	-.246 p = .137	.275 p = .095
Total Alexithymia	-.111 p = .508	.020 p = .906	-.270 p = .101	.066 p = .695
AD	-.205 p = .217	.388* p = .016	-.251 p = .128	.368* p = .023
AII	-.232 p = .162	.398* p = .013	-.055 p = .742	.336* p = .039
DD	-.270 p = .101	.120 p = .474	-.032 p = .849	.100 p = .551
Total Dissociation	-.287 p = .081	.384* p = .017	-.128 p = .443	.399* p = .013
Somatisation	-.234 p = .158	.130 p = .438	-.224 p = .177	.254 p = .124
Age	.130 p = .437	-.045 p = .790	.337* p = .039	-.075 p = .653

PEARSON	DIF	DDF	EOT	Total Alexithymia
DIF	---	.765** p = .000	.380* p = .019	.923** p = .000
DDF	.765** p = .000	---	.356* p = .028	.872** p = .000
EOT	.380* p = .019	.356* p = .028	---	.640** p = .000
Total Alexithymia	.923** p = .000	.872** p = .000	.640** p = .000	---
AD	.635** p = .000	.599** p = .000	.410* p = .011	.681** p = .000
AII	.548** p = .000	.457** p = .004	.031 p = .854	.463** p = .003
DD	.604** p = .000	.423** p = .008	.057 p = .735	.485** p = .002
Total Dissociation	.617** p = .000	.509** p = .001	.140 p = .400	.555** p = .000
Somatisation	.595** p = .000	.454** p = .004	.277 p = .092	.567** p = .000
Age	-.272 p = .099	-.323* p = .048	.037 p = .827	-.245 p = .138

PEARSON	AD	AII	DD	Total Dissociation
AD	---	.736** p = .000	.616** p = .000	.871** p = .000
AII	.736** p = .000	---	.755** p = .000	.946** p = .000
DD	.616** p = .000	.755** p = .000	---	.786** p = .000
Total Dissociation	.871** p = .000	.946** p = .000	.786** p = .000	---
Somatisation	.468** p = .003	.460** p = .004	.351* p = .030	.500** p = .001
Age	-.047 p = .779	-.157 p = .346	-.152 p = .361	-.091 p = .588

PEARSON	Age
Somatisation	-.334* p = .041

Appendix 14

Spearman Rho Correlations

SPEARMAN	SA	Pun	EA	Neg	Total Abuse
SA	---	.391* p = .015	.470** p = .003	.503** p = .001	.518** p = .001
Pun	.391* p = .015	---	.833** p = .000	.808** p = .000	.891** p = .000
EA	.470** p = .003	.833** p = .000	---	.927** p = .000	.958** p = .000
Neg	.503** p = .001	.808** p = .000	.927** p = .000	---	.975** p = .000
Total Abuse	.518** p = .001	.891** p = .000	.958** p = .000	.975** p = .000	---
Mum Care	-.546** p = .000	-.689** p = .000	-.628** p = .000	-.670** p = .000	-.696** p = .000
Mum Over'	.485** p = .002	.440** p = .006	.441** p = .006	.388* p = .016	.442** p = .005
Dad Care	-.287 p = .081	-.623** p = .000	-.614** p = .000	-.671** p = .000	-.676** p = .000
Dad Over'	.267 p = .105	.436** p = .006	.463** p = .003	.427** p = .007	.483** p = .002
DIF	-.109 p = .514	.235 p = .156	.139 p = .405	.106 p = .527	.122 p = .467
DDF	-.166 p = .320	.213 p = .198	.051 p = .762	.061 p = .718	.074 p = .657
EOT	-.083 p = .621	.105 p = .530	.035 p = .835	-.012 p = .945	.025 p = .880
Total Alexithymia	-.124 p = .457	.248 p = .133	.130 p = .435	.104 p = .535	.126 p = .449

Significance level: **. Significant at the .01 level (2-tailed)
*. Significant at the .05 level (2-tailed)

Abbreviations: SA – Sexual Abuse; Pun – Punishment; EA – Emotional Abuse; Neg – Negative Home Environment & Neglect; Over' – Overprotection; DIF – Difficulty Identifying Feelings; DDF – Difficulty Describing Feelings; EOT – Externally Oriented Thinking.

SPEARMAN	SA	Pun	EA	Neg	Total Abuse
AD	.117 p = .483	.507** p = .001	.255 p = .123	.236 p = .154	.301 p = .067
AII	.284 p = .084	.386* p = .017	.373* p = .021	.340* p = .037	.368* p = .023
DD	.288 p = .079	.288 p = .079	.177 p = .287	.185 p = .266	.218 p = .188
Total Dissociation	.253 p = .126	.454** p = .004	.311 p = .057	.286 p = .082	.346* p = .033
Somatisation	-.040 p = .810	.452** p = .004	.371* p = .022	.388* p = .016	.407* p = .011
Age	.045 p = .790	-.273 p = .097	-.400* p = .013	-.373* p = .021	-.370* p = .022
Gender	.061 p = .715	-.003 p = .988	.166 p = .320	.168 p = .313	.119 p = .477
Education	.072 p = .666	.046 p = .783	-.065 p = .700	-.031 p = .854	-.008 p = .963
SES	.025 p = .879	.249 p = .132	.268 p = .104	.309 p = .059	.287 p = .081

Abbreviations: AD – Amnestic Dissociation; AII – Absorption & Imaginative Involvement; DD – Depersonalisation / Derealisation; SES – Socio-Economic Status.

SPEARMAN	Mum Care	Mum Over'	Dad Care	Dad Over'
Mum Care	---	-.494** p = .002	.551** p = .000	-.361* p = .026
Mum Over'	-.494** p = .002	---	-.109 p = .516	.555** p = .000
Dad Care	.551** p = .000	-.109 p = .516	---	-.336* p = .039
Dad Over'	-.361* p = .026	.555** p = .000	-.336* p = .039	---
DIF	-.095 p = .569	-.042 p = .801	-.210 p = .206	-.031 p = .851
DDF	-.078 p = .642	.026 p = .875	-.217 p = .190	-.117 p = .485
EOT	-.205 p = .218	.132 p = .428	-.227 p = .171	.269 p = .103
Total Alexithymia	-.170 p = .307	.064 p = .704	-.250 p = .129	.058 p = .731
AD	-.229 p = .166	.400* p = .013	-.277 p = .092	.320 p = .050
AII	-.190 p = .253	.423** p = .008	-.060 p = .719	.321* p = .049
DD	-.257 p = .120	.128 p = .442	-.053 p = .750	.029 p = .863
Total Dissociation	-.281 p = .087	.395* p = .014	-.143 p = .391	.360* p = .026
Somatisation	-.336* p = .039	.147 p = .378	-.277 p = .092	.317 p = .052
Age	.173 p = .300	-.048 p = .775	.352* p = .030	-.129 p = .442
Gender	-.122 p = .467	.057 p = .734	-.039 p = .817	.127 p = .448
Education	.008 p = .964	.062 p = .712	-.016 p = .926	.128 p = .444
SES	-.213 p = .199	-.139 p = .406	-.297 p = .071	-.105 p = .531

SPEARMAN	DIF	DDF	EOT	Total Alexithymia
DIF	---	.722** p = .000	.377* p = .019	.919** p = .000
DDF	.722** p = .000	---	.314 p = .055	.823** p = .000
EOT	.377* p = .019	.314 p = .055	---	.623** p = .000
Total Alexithymia	.919** p = .000	.823** p = .000	.623** p = .000	---
AD	.633** p = .000	.614** p = .000	.347* p = .033	.674** p = .000
AII	.568** p = .000	.476** p = .003	.042 p = .804	.501** p = .001
DD	.607** p = .000	.433** p = .007	.063 p = .708	.506** p = .001
Total Dissociation	.621** p = .000	.535** p = .001	.160 p = .337	.592** p = .000
Somatisation	.561** p = .000	.402* p = .012	.340* p = .037	.541** p = .000
Age	-.236 p = .155	-.286 p = .082	.058 p = .727	-.202 p = .223
Gender	-.150 p = .369	-.132 p = .430	-.355* p = .029	-.225 p = .175
Education	-.209 p = .207	-.080 p = .634	-.249 p = .131	-.233 p = .160
SES	.193 p = .245	.281 p = .087	-.259 p = .117	.095 p = .570

SPEARMAN	AD	AII	DD	Total Dissociation
AD	---	.756** p = .000	.637** p = .000	.875** p = .000
AII	.756** p = .000	---	.762** p = .000	.930** p = .000
DD	.637** p = .000	.762** p = .000	---	.799** p = .000
Total Dissociation	.875** p = .000	.930** p = .000	.799** p = .000	---
Somatisation	.491** p = .002	.473** p = .003	.313 p = .056	.502** p = .001
Age	-.055 p = .743	-.155 p = .354	-.136 p = .416	-.078 p = .641
Gender	-.036 p = .828	.155 p = .353	.147 p = .380	.101 p = .547
Education	-.008 p = .964	-.148 p = .377	-.155 p = .353	-.080 p = .632
SES	.166 p = .321	.217 p = .191	.346* p = .033	.237 p = .151

SPEARMAN	Somatisation	Age	Gender	Education	SES
Somatisation	---	-.319 p = .051	.072 p = .666	-.316 p = .054	.212 p = .202
Age	-.319 p = .051	---	-.336* p = .039	-.107 p = .523	-.323* p = .048
Gender	.072 p = .666	-.336* p = .039	---	-.032 p = .847	.242 p = .144
Education	-.316 p = .054	-.107 p = .523	-.032 p = .847	---	-.006 p = .970
SES	.212 p = .202	-.323* p = .048	.242 p = .144	-.006 p = .970	---

Appendix 15

Regression Analyses

N = 38. Regression Analyses with Amnestic Dissociation (AD) as Mediator.

Step	Unstandardised Regression Coefficient	Standard Error	*t*	Sig. (2-tailed)
1	.769	.253	3.041	.004**
2	1.108 (*a*)	.306 (S_a)	3.617	.001**
3	.253 (*b*)	.133 (S_b)	1.906	.065
4	--	--	--	--

N = 38. Regression Analyses with Total Dissociation as Mediator.

Step	Unstandardised Regression Coefficient	Standard Error	*t*	Sig. (2-tailed)
1	.769	.253	3.041	.004**
2	1.055 (*a*)	.303 (S_a)	3.484	.001**
3	.295 (*b*)	.132 (S_b)	2.238	.032*
4	.457	.277	1.648	.108

Significance level: **. Significant at the .01 level (2-tailed)
*. Significant at the .05 level (2-tailed)

N = 37 (subject 5 removed).

Regression Analyses with Amnestic Dissociation (AD) as Mediator.

Step	Unstandardised Regression Coefficient	Standard Error	*t*	Sig. (2-tailed)
1	.914	.234	3.901	.000**
2	1.190 (*a*)	.311 (S_a)	3.830	.001**
3	.184 (*b*)	.125 (S_b)	1.464	.152
4	--	--	--	--

N = 37 (subject 5 removed).

Regression Analyses with Total Dissociation as Mediator.

Step	Unstandardised Regression Coefficient	Standard Error	*t*	Sig. (2-tailed)
1	.914	.234	3.901	.000**
2	1.182 (*a*)	.297 (S_a)	3.982	.000**
3	.193 (*b*)	.131 (S_b)	1.473	.150
4	--	--	--	--

Significance level: **. Significant at the .01 level (2-tailed)

Appendix 16

Sobel Test

Mediator Variable	N	z	Sig.
AD	38	1.684	.092
Total Dissociation	38	1.881	.060
AD	37	1.374	.169
Total Dissociation	37	1.382	.167